SAMSUNG

DISHWASHER

Model Name : DW5363 Series

Model Code : DW5363PGBSL/EF

SERVICE *Manual*

DISHWASHER

CONTENTS

1. Safety Instructions
2. Features and Specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. Pcb Diagram
6. Schematic Diagram
7. Reference

Refer to the service manual in the GSPN (see the rear cover) for the more information.

CONTENTS

1. Safety Instructions 1
1-1. Safety Instructions for Service Engineers 1

2. Features and Specifications 5
2-1. Features 5
2-2. Specifications 6
2-3. Comparing specifications with existing models 10
2-4. Options specifications 12

3. Disassembly and Reassembly 14
3-1. Tools for disassembly and reassembly 14
3-2. Standard Disassembly Drawings 15
3-3. Checkpoints after Finishing a Service 36

4. Troubleshooting 38
4-1. Error Codes 38
4-2 Test Mode 41
4-3 Malfunction Table 45

5. Pcb Diagram 56
5-1. Detailed Specification and Descriptions for Connectors and Relay Terminals (MAIN PBA) 56
5-2. Detailed Specification and Descriptions for Connectors and Relay Terminals (FS SUB PBA) 57
5-3. Detailed Specification and Descriptions for Connectors and Relay Terminals (SUB PBA) 58
5-4. Detailed Specification and Descriptions for Connectors and Relay Terminals (TOUCH PBA) 59

6. Schematic Diagram 60
6-1. Main control 60
6-2. SUB PBA (FS Model) 61
6-3. SUB PBA (FBI Model) 62
6-4. Wire diagram 63

7. Reference 64
7-1. Model Number Naming Rules 64
7-2. Model Number Naming Rules 64
7-3. Terminology 65

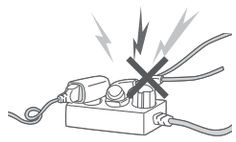
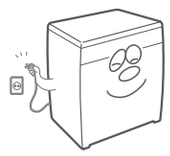
1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIONS FOR SERVICE ENGINEERS

- ▶ Make sure to observe the following instructions to operate the product correctly and safely and prevent possible accidents and hazards while servicing.
- ▶ Two types of safety symbols, Warning and Caution, are used in the safety instructions.

⚠	**Warning**	Hazards or unsafe practices that may result in severe personal injury or death.
⚠	**Caution**	Hazards or unsafe practices that may result in minor personal injury or property damage.

⚠ Warning

Before Servicing	
• **When servicing electrical parts or harnesses. Make sure to disconnect the circuit breaker or power cable before servicing.** ➢ Failing to do so may result in a risk of electric shock.	
• **Do not allow consumers to connect several appliances to a single power outlet at the same time.** ➢ There is a risk of fire due to overheating.	
• **When removing the power cord, make sure to hold the power plug when pulling the plug from the outlet.** ➢ Failing to do so may damage the plug and result in fire or electric shock.	
• **When the dishwasher is not being used, make sure to disconnect the circuit breaker or power cable from the power outlet.** ➢ Failing to do so may result in electric shock or fire due to lightning.	
• **Do not place or use gasoline, thinners, alcohol, or other flammable or explosive substances near the dishwasher.** ➢ There is a risk of explosion and fire caused from electric sparks.	

While Servicing

- **Check if the power cable is damaged, flattened, cut or otherwise degraded.**
  - ➢ If faulty, replace it immediately.
    Failing to do so may result in electric shock or fire.

- **Completely remove any dust or foreign material from the housing, wiring and connection parts.**
  - ➢ This will prevent a risk of fire due to tracking and shorts in advance.

- **When connecting wires, make sure to connect them using the relevant connectors and check that they are completely connected.**
  - ➢ If tape is used instead of the connectors, it may cause fire due to tracking.

- **Make sure to discharge the PBA power and capacitor terminals before starting the service.**
  - ➢ Failing to do so may result in a high voltage electric shock.

- **When replacing the heater, make sure to fasten the holder heater after ensuring that it is inserted into the bracket-heater.**
  - ➢ If not inserted into the bracket-heater, it touches the tub and causes noise and electric leakage.

After Servicing

- **Check for any water leakage.**
  - ➢ Perform a test run for the dishwasher using the standard(normal) cycle and check whether there is any water leakage through the floor section or the pipes.

- **Do not allow consumers to repair or service any part of the dishwasher themselves.**
  - ➢ This may result in personal injury and shorten the product lifetime.

- **If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.**
  (Check the grounding of the power outlet, and additionally ground it to a metallic water pipe.)
  - ➢ Failing to do so may result in electric shock due to electric leakage.

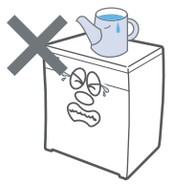
  [Running a grounding wire]
  - Twist a grounding wire (copper wire) two or three times around the tap.
  - If you connect the grounding wire to a copperplate, bury it 75 cm under the earth in a place with a lot of moisture.
    - ✱ Do not connect the grounding wire to a gas pipe, plastic water pipe or telephone wire. There is a risk of electric shock or explosion.

⚠ Caution

Before Servicing

- **Do not sprinkle water onto the dishwasher directly when cleaning it.**
  - ➢ This may result in electric shock or fire, and may shorten the product lifetime.

- **Do not place any containers with water on the dishwasher.**
  - ➢ If the water is spilled, it may result in electric shock or fire. This will also shorten the product lifetime.



- **Do not install the dishwasher in a location exposed to snow or rain.**
  - ➢ This may result in electric shock or fire, and shorten the product lifetime.

- **Do not press a control button using a sharp tool or object.**
  - ➢ This may result in electric shock or damage to the product.

During Servicing

- **When wiring a harness, make sure to seal it completely so no liquid can enter.**
  - ➢ Make sure that they do not break when force is exerted.

- **Check if there is any residue that shows that liquid entered the electric parts or harnesses.**
  - ➢ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

- **If you need to place the dishwasher on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so the back is on the floor.**
  - ➢ Do not lay it down on its front or side. This may result in scratches to the surface or damage to the parts.

After Servicing

- **Check the assembled status of the parts.**
  - ➢ They must be the same as before servicing.

- **Check the insulation resistance.**
  - ➢ Disconnect the circuit breaker or power cable from the power outlet and measure the insulation resistance between the power wires and the grounding wire of the dishwasher. The value must be greater than 10MΩ when measured with a 500V DC Megger.

- **Check whether the product is level with the floor. Check if there are any deformations in the sink. Check that the dishwasher is firmly installed to the sink.**
  - ➢ Vibrations can shorten the lifetime of the product.

2. FEATURES AND SPECIFICATIONS

2-1. FEATURES

Features	Description
Fully-Integrated design	Fully-Integrated (Hidden Control) design is to matching the kitchen friendly atmosphere.
High Performance	Efficient noise control technology is used for the quieter possible operation.
Easy to use	Height adjustable Upper Basket The upper rack is movable for larger dishes. The space has been maximized to accommodate a variety of dish sizes.
Auto Program	The auto cycle determines the level of soil on the dishes and initiates the optimal cycle using this feature saving water, energy and time.
FLEX wash	Select FLEX wash for 3 kinds wash type. (Optional FLEX wash : full wash, upper wash only or lower wash only.)
Safety	Water Leakage and Water Overflow sensor Protection Water leakage sensor is for protecting damage of home floor.

2-2. SPECIFICATIONS(FBI)

Model name		DW-BG970B
Type		Fully Built-in Dishwasher
Power		AC 220 ~ 240 V / 50 Hz
Washing type		Rotating spraying arms
Drying type		SDP drying system
Water pressure		0.05 - 0.8 Mpa
Wash Capacity		14 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 53℃
Water consumption		Eco 10L
Wash cycles		7 Cycles
Rated Power		2,000 - 2,300 W
Weight		Unpacking 46kg, Packed 49kg

Model name		DW-BG770B/D170
Type		Fully Built-in Dishwasher
Power		AC 220 ~ 240 V / 50 Hz
Washing type		Rotating spraying arms
Drying type		Condensing drying system
Water pressure		0.05 - 0.8 Mpa
Wash Capacity		14 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 60℃
Water consumption		Eco 10L
Wash cycles		7 Cycles
Rated Power		2,000 - 2,300 W
Weight		Unpacking 46kg, Packed 49kg.

Model name		DW-BG570B
Type		Fully Built-in Dishwasher
Power		AC 220 ~ 240 V / 50 Hz
Washing type		Rotating spraying arms
Drying type		Condensing drying system
Water pressure		0.05 - 0.8 Mpa
Wash Capacity		13 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 60℃
Water consumption		Eco 12L
Wash cycles		7 Cycles
Rated Power		2,000 - 2,300 W
Weight		Unpacking 44.5kg, Packed 47.5kg.

SPECIFICATIONS(SBI)

Model name		DW-SG970T
Type		Semi Built-in Dishwasher
Power		AC 220 ~ 240V / 50Hz
Washing type		Rotating spraying arms
Drying type		SDP drying system
Water pressure		0.05 – 0.8 Mpa
Wash Capacity		14 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 53℃
Water consumption		Eco 10L
Wash cycles		7 Cycles
Rated Power		2,000 ~ 2,300W
Weight		Unpacking 46kg, Packed 49kg

Model name		DW-SG720T/D175
Type		Semi built in
Power		AC220~240V / 50Hz
Washing type		Rotating spraying arms
Drying type		Condensing drying system
Water pressure		0.05 ~ 0.8 Mpa
Wash Capacity		14 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 60℃
Water consumption		Eco 10L
Wash cycles		7 Cycles
Rated Power		2,000 ~ 2,300W
Weight		Unpacking : 46Kg, Packed : 49Kg

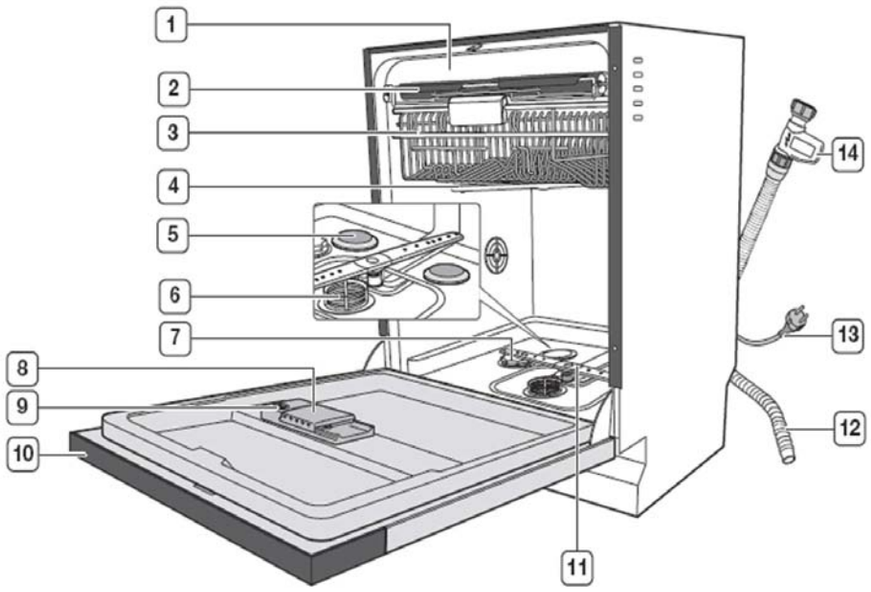
Model name		DW-SG520W
Type		Semi Built-in Dishwasher
Power		AC 220 ~ 240V / 50Hz
Washing type		Rotating spraying arms
Drying type		Condensing drying system
Water pressure		0.05 – 0.8 Mpa
Wash Capacity		13 Place setting
Temperature	Wash temperature	Eco 45℃
	Rinse temperature	Eco 60℃
Water consumption		Eco 12L
Wash cycles		7 Cycles
Rated Power		2,000 ~ 2,300W
Weight		Unpacking 44.5kg, Packed 47.5kg

SPECIFICATIONS(FS)

Model name	DW-FG720W
Type	Free standing
Power	AC 220~240V / 50Hz
Washing type	Rotating spraying arms
Drying type	Condensing drying system
Water pressure	0.05 ~ 0.8 Mpa
Wash Capacity	14Place setting 15place setting(FG720W/XSA)
Temperature	Main : 45°C, Rinse : 58°C(Eco) Main : 45°C, Rinse : 46°C(FG720W/XSA, Normal)
Water consumption	Eco 10L Normal 12L(FG720W/XSA)
Wash cycles	7 Cycles
Rated Power	2,000 ~ 2,300W
Weight	Unpacking : 49.5g, Packed : 52.5Kg

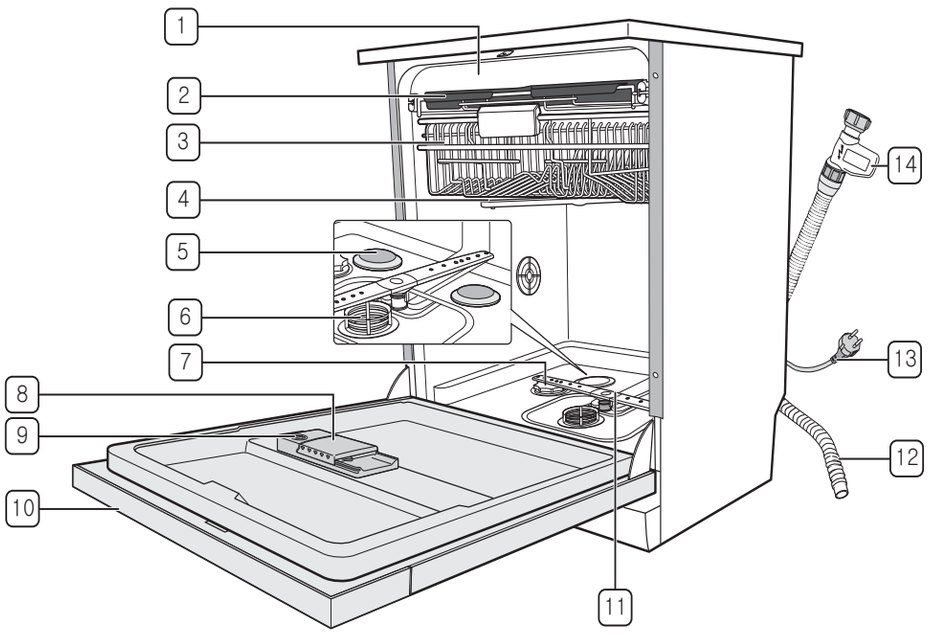
Model name	DW-FG520W, D147W, D149STS, D149W
Type	Free standing
Power	AC 220~240V / 50 Hz
Washing type	Rotating spraying arms
Drying type	Condensing drying system
Water pressure	0.05 ~ 0.8 Mpa
Wash Capacity	13 Place setting
Temperature	Main : 45°C, Rinse : 60°C(Eco) Main : 43°C, Rinse : 45°C(FG520W/XSA. Normal)
Water consumption	Eco 12L Normal 11.8L(FG520W/XSA)
Wash cycles	7 Cycles
Rated Power	2,000 ~ 2,300W
Weight	Unpacking : 48Kg, Packed : 51Kg

2-2-1. View(FBI, SBI)



1	Top spray arm (not shown)
2	Cutlery tray or cutlery basket (select models)
3	Upper basket
4	Upper spray arm
5	Intensive zone
6	Filter coombination
7	Salt reservoir
8	Detergent dispenser
9	Rinse aid reservoir
10	Control panel
11	Lower spray arm
12	Drain hose
13	Power cord
14	Aqua-Stop

2-2-2. View(FS)



1	Top spray arm (not shown)
2	Cutlery tray (DW-FG720) Cutlery basket (DW-FG520, D147, D149)
3	Upper basket
4	Upper spray arm
5	Intersive zone spray disk (DW-FG720)
6	Filter coombination
7	Salt reservoir
8	Detergent dispenser
9	Rinse aid reservoir
10	Control panel (in front of the door)
11	Lower spray arm
12	Drain hose
13	Power cord
14	Aqua-Stop

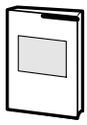
2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

Install		FBI		
Design	Grade	Prem.	Best	Better
	MODEL	**DM-BG970B**	**DW-BG770B/D170**	**DW-BG570B**
	Photo			
Performance	Noise(dB)	40	41	45
	Energy (kWh)	0.83	0.9	0.97
	WATER	10	10	12
	Capacity	14	14	13
Specification	3rd Rack	O	O	X
	Power Zone	O	O	X
	Interior Light	O	X	X
	Dual Display	X	X	X

Install		FS		
Design	Grade	Best	Better	
	MODEL	**DW-FG720W**	**DW-FG520W / D147W**	**D149STS / D149W**
	Photo			
Performance	Noise(dB)	45	48	47
	Energy (kWh)	0.96 0.72(FG720W/XSA)	0.97 0.69(FG520W/XSA)	0.97
	WATER	10 12(FG720W/XSA)	12 11.8(FG520W/XSA)	12
	Capacity	14 15(FG720W/XSA)	13	13
Specification	3rd Rack	O	X	X
	Power Zone	O	X	X
	Interior Light	X	X	X
	Dual Display	X	X	X

Install		SBI		
Design	Grade	Premium	Best	Better
	MODEL	**DW-SG970T**	**DW-SG720T/D175**	**DW-SG520W**
	Photo			
Performance	Noise(dB)	40	41	45
	Energy (kWh)	0.83	0.9	0.97
	WATER	10	10	12
	Capacity	14	14	13
Specification	3rd Rack	O	O	X
	Power Zone	O	O	X
	Interior Light	O	X	X
	Dual Display	O	X	X

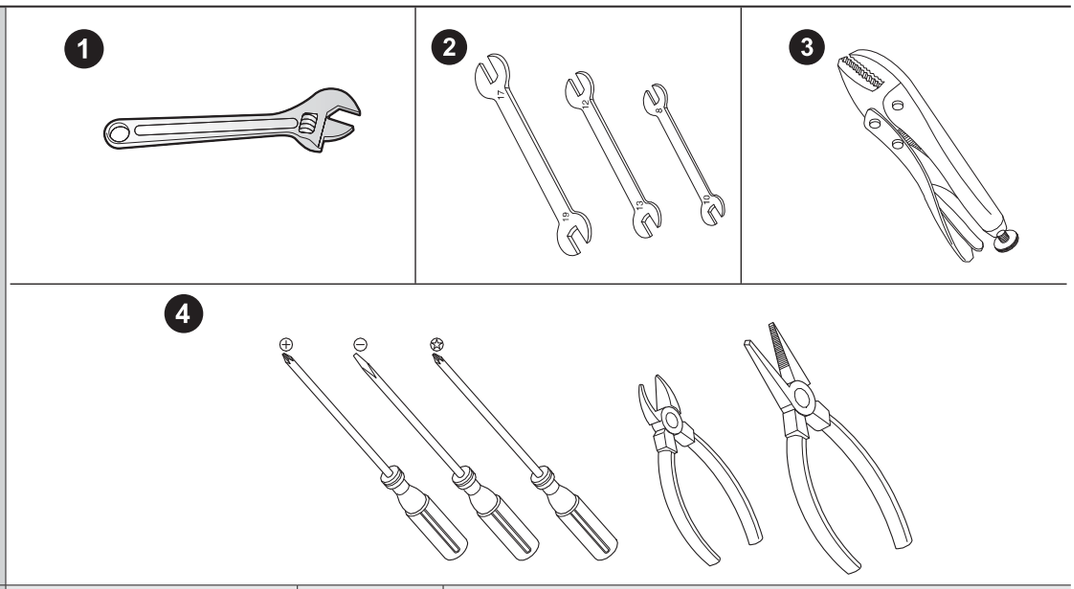
2-4. OPTIONS SPECIFICATIONS

Photo	Item	Code	Quantity	Remarks
	Install Kit	DD61-00176A	1	Option for FBI, SBI
	Holder hose	DD61-00397A	1	Provided with the dishwasher
	Guide Salt	DD81-01067A	1	
	User manual	DD68-00092A (FBI) DD68-00135A (SBI) DD68-00093A (FS)	1	

MEMO

3. DISASSEMBLY AND REASSEMBLY

3-1. TOOLS FOR DISASSEMBLY AND REASSEMBLY

Tool image	
	

No.	Tool	Type	Remarks
①	Adjustable Wrench		
②	Open-end Wrench	1-7/16”	Leg
③	Vice pliers		
④	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing Screwdriver - Philips, flat, Torx T20, T25

Preparation for parts replacemen

1. Take out the residual water inside the product. (Drain the water by operating the drain pump)
2. Close the water supply valve.
3. Turn off the power & disconnect power cable. You must turn off the circuit breaker connected to the product.
4. Pull out the unit from the sink and lay it on the floor. Be careful of the drain hose when pulling out the unit.

3-2. STANDARD DISASSEMBLY DRAWINGS

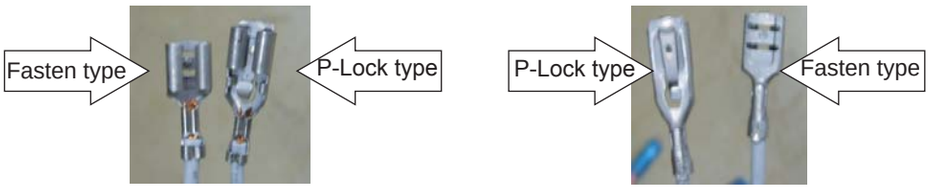
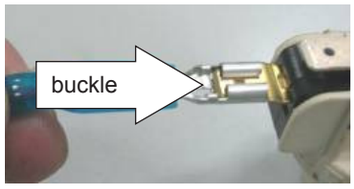
Throughout this manual, features and appearance may vary from your model.

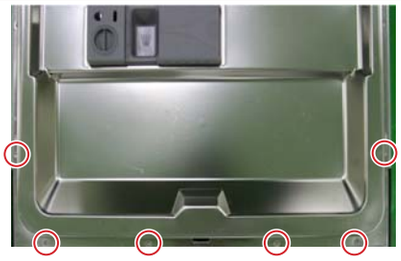
⚠ **WARNING: Always turn off the electric power supply & water supply before servicing** any electrical component, making ohmmeter checks, or replacing any parts.

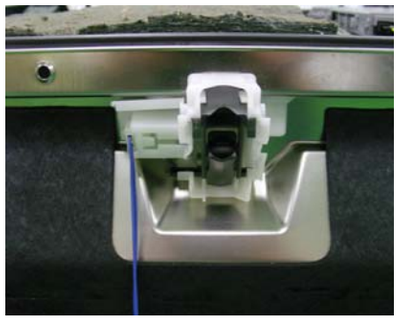
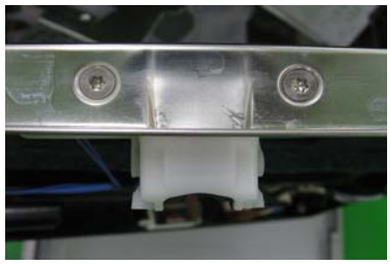
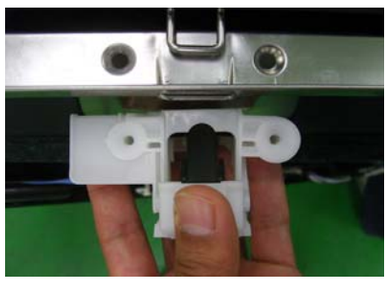
⚠ **Caution :** Make sure to remove remain water in the dishwasher. If not, wet the floor. To prevent drop water on the floor, we recommend to lay the towel before laying down.

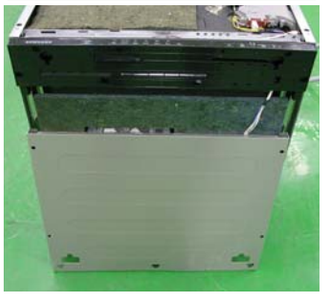
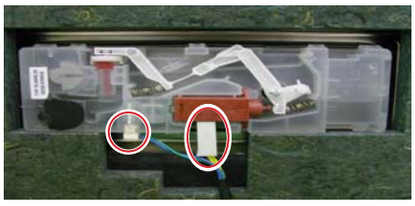
Note: All voltage checks should be made with a voltmeter having a full scale range of 250 volts or higher. After service is completed, be sure all safety grounding circuits are complete, all electrical connections are secure, and all access panels are in place.

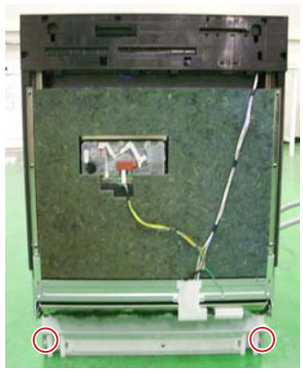
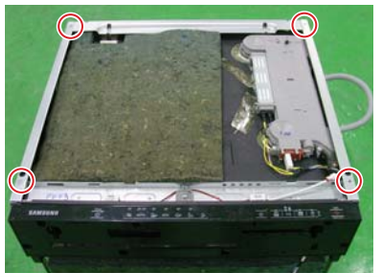
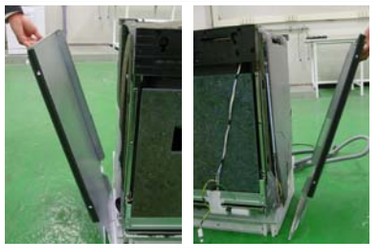
Before servicing, make sure to remove all items include baskets inside dishwasher.

<table>
<tr><th>Part</th><th>Photo</th><th>Description</th></tr>
<tr><td>Terminal
- Fasten type
- P-Lock type</td><td colspan="2">This dishwasher use 2 kinds terminal type.
- Fasten type for PCB. (high current part)
- P-Lock type for the other wire terminals.
 
</td></tr>
<tr><td rowspan="2">Remove the Terminal
- P-Lock type</td><td> 
</td><td>1. Terminal with buckle</td></tr>
<tr><td> </td><td>2. Press the buckle, and pull out the terminal.</td></tr>
<tr><td>Remove the Terminal
- Fasten type</td><td> </td><td>Fasten type is very fastened to each connector.</td></tr>
</table>

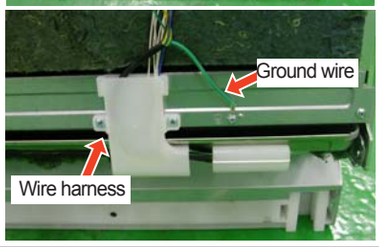
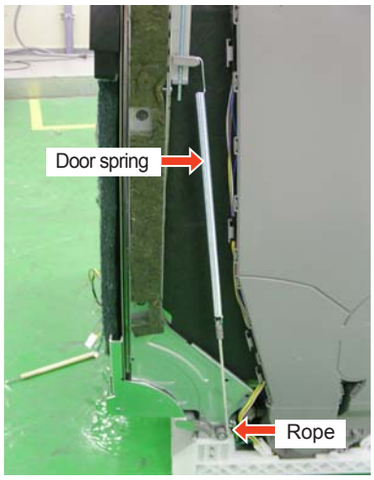
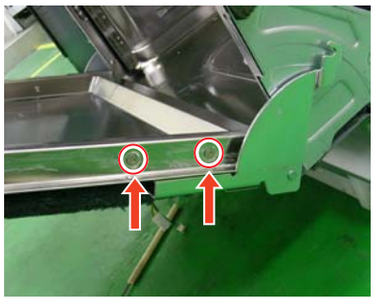
Part	Photo	Description
Assy control panel & Sub PBA		1. Disconnect the electrical supply from the dishwasher. 2. Open the dishwasher door. 3. Remove the 6 screws that connect the Assy control panel to the dishwasher door.
		Also, It need to disassemble the outer door which it covers the door to the dishwasher. 4. Remove the 6 screws and the door panel from the door assembly.
		It is Sub PBA in Control panel. 5 As Sub PBA was not assembled by Screws and was assembled by hook, hook takes care as do not break and separates Sub PBA in control panel.

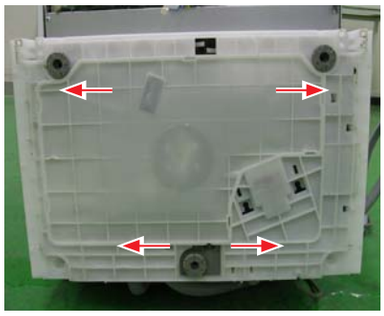
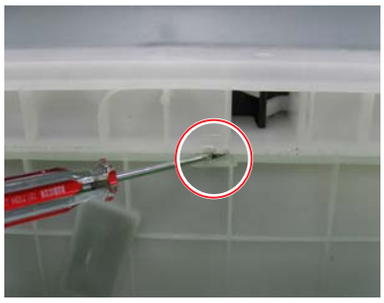
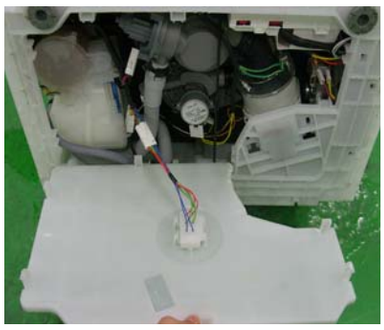
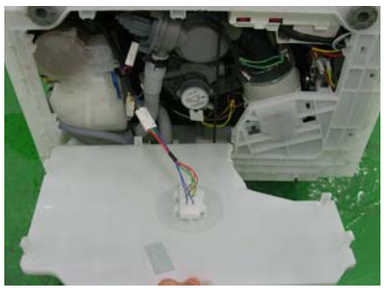
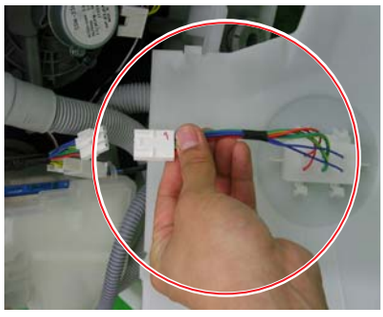
Part	Photo	Description
Control Panel - Door switch		The latch and switch assembly are located on the door assembly behind the control panel cover. The dishwasher will not operate until the door is closed, the latch engages the door catch (holding the door firmly against the seal). The terminal on the door switch, which keep contact during door is closed.
		1. disconnect the is 1 terminal from the door switch.
		2. Remove the 2 screws(trox T20) connected to inner door .
		3. Remove the door switch assembly. 4. Reverse the above procedure to install.

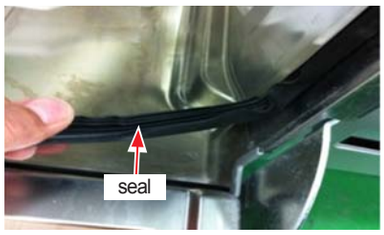
Part	Photo	Description
Outer Door		The outer door covers the door to the dishwasher and protects the detergent dispenser. 1. Disconnect power. 2. Open the dishwasher door.
		3. Remove the 6 screws and the door panel from the door assembly. Do not remove the 6 screws that hold the control panel cover to the door assembly.
Dispenser		1. Disconnect the 2 terminals from the dispenser.
		2. Remove the dispenser from door assembly with pressing the hook. (horizontal arrow)
		3. Reverse the above procedure to install.

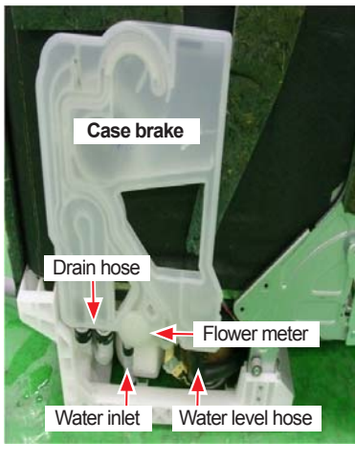
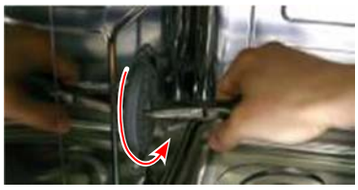
Part	Photo	Description
Outside panel (continued)		1. Open the door and remove the 4 screws that connect side panels to tub.
		2. Remove the 2 screws in the front lower.
		3. Remove the 6 screws at the back .
		4. Remove the 4 screws on the top & 2 screws at the top of back-side.
		5. Take off the left side panel. 6. Take off the right side panel.

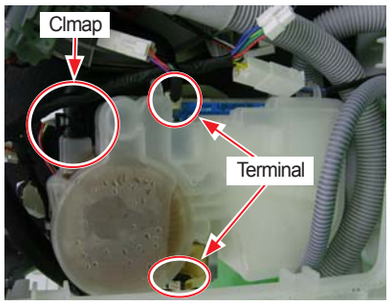
Part	Photo	Description
Outside panel		7. Take off the tub insulation over the dishwasher tub. 8. Reverse the above procedure to install.

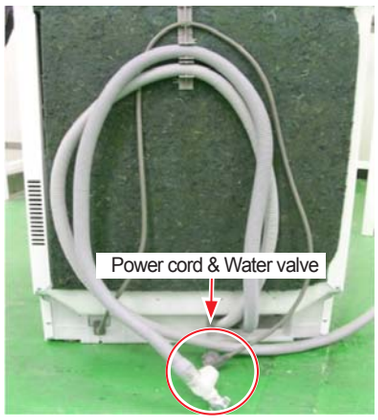
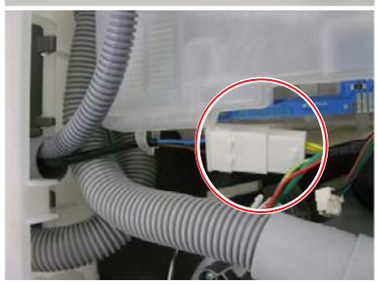
Part	Photo	Description
Door Assembly	 	1. Disconnect power. 2. Remove the outer door. 3. Remove the Assy control panel. 4. Disconnect the wire terminals from Sub PBA. 5. Disconnect the 2 terminal lugs from the Dispenser. 6. Remove the ground wire from the door. 7. If need, remove the dispenser. 8. Remove the outside panel. (Left & Right)
		9. Release the lower part of the door spring from the rope.
		10. Open the dishwasher door . 11. Remove the 2 screws of Inner door's left and right side. ⚠ **Caution** When remove the 4 screws of inner door, should hold the inner door part to block the dropping it. 12. Remove the 2 screws of Inner door's right-side. 13. Remove the inner door. 14. Reverse the above procedure to install.

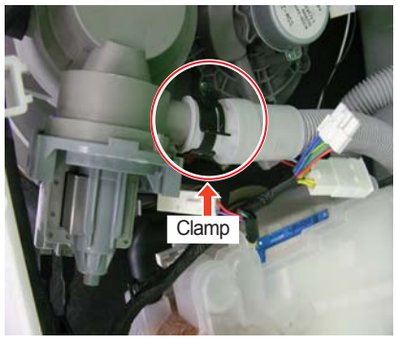
Par	Photo	Description
Assy cover base		1. Drain up the water in the dishwasher, and disconnect the power supply. ⚠ **Caution** Make sure to remove remain water in the dishwasher. If not, wet the floor. To prevent drop water on the floor, we recommend to lay the towel before laying down. 2. Lay down the dishwasher on its back.
		3. Put flat-bladed screwdriver between hook that is assembling Base and Cover Base and separate Cover Base.
		4. Confirm whether Leakage Sensor terminal that is built to Cover Base after separate Assy Cover Base was contracted.
Cover base **- Leakage sensor**	 	Separate hook that is fixing Cover Base and Base.

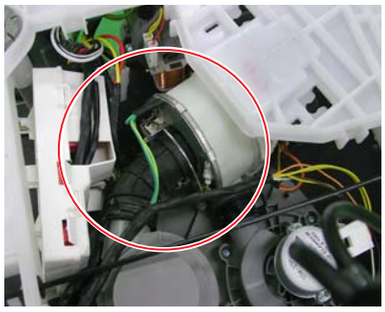
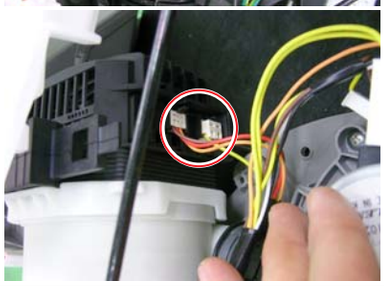
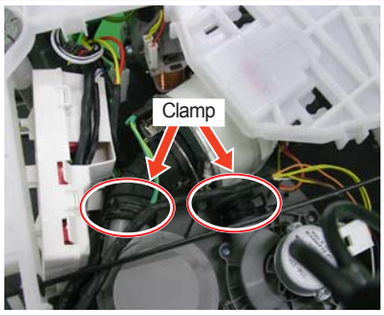
Par	Photo	Description
Dishwasher Tub Seal	**The dishwasher tub seal prevents water leakage.** **The seal is fitted in a seal channel that lines the rim of the dishwasher tub.**	
		1. Open the dishwasher door. 2. Grab one end of the dishwasher tub seal and peal it away from the seal channel.
		Reassemble order 1. Fold the seal and confirm the seal's center. 2. Center align the latch wire and insert the seal. 3. Insert center and left & right 10cm
	 	4. Insert the lower.(Left/Right) Remained length : 20 ~ 25mm 5. Insert the round section. ⚠ **Caution** : Wrinkle must not occur. 6. And Insert the remaining section and You have to confirm about the seal's height from the seal channel.

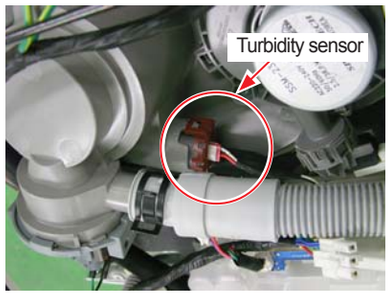
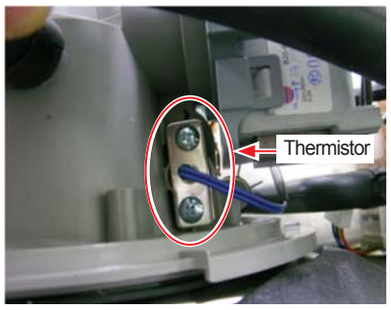
Part	Photo	Description
Case brake	The case brake is mounted on the left side of the tub. Its purpose is to provide a method of supplying water for the wash and rinse cycles. The air gap prevents the siphoning of wash water from flowing back into the water supply system, should the water pressure drop to less than atmospheric pressure. The water in the air breaker is used to regenerate the water softener. The air inlet allows air into the tub to permit air flow for dish drying. Also the air can flow out through the case brake. Flow meter embedded in the air breaker can give electronic pulse output to electronic controller, so the supplying water could be controlled accurately.	
		1. Remove the left outside panel. 2. Release the flow meter wire connector. Loosen the clamp and disconnect the 3 hoses from the air breaker. Inlet hose's clamp.
		3. Open the dishwasher door. 4. Remove cover brake rotating it.(counterclockwise) Use a jig. If you have no jig, you can use a long nose pliers covering with fabric. (It can make scratch or breakage, be careful)
	 	5. Loosen the 4 clamps and release the 4 hoses from the Assy case brake. 6. Remove the case brake. 7. Reverse the above procedure to install. ⚠ **Caution** : When reassemble clamp direction - 2 Drain hose & Inlet hose : Inside - Overflow hose : Right ⚠ **Caution** : When reassemble it, ensure to place the seal (gasket) on original location. ⚠ **Caution** : When reassemble it, ensure to connect the each hose on original location

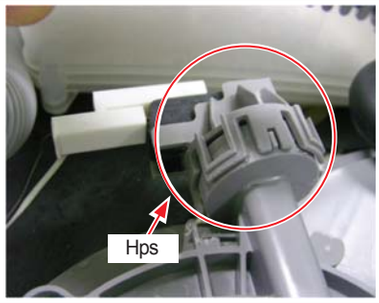
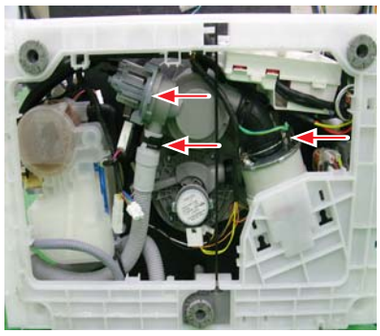
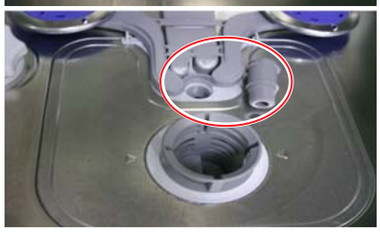
Part	Photo	Description
Water softener	The water softener is equipped with a special softener that uses a salt specifically designed to eliminate lime and minerals from the water. If hard water is used in the dishwasher, deposits will form on the dishes and utensils.	
		1. Drain up the water in the dishwasher, and disconnect the power supply ⚠ Caution Make sure to remove remain water in the dishwasher. If not, wet the floor. To prevent drop water on the floor, we recommend to lay the towel before laying down. 2. Remove the outside panel. 3. Lay down the dishwasher on its back. 4. Remove the cover base.
		5. Remove the 2 terminal lugs connected to the water softener. 6. Loosen the clamp and disconnect the hose from the water softener. ⚠ Caution The clamp is easily damaged during removal and should not be reused. Replace the old clamp with a new clamp bend (ear clamp).
		7. Remove the lower basket and then unscrew and remove the cap from the salt container. 8. Remove the softner-holder. The softner-holder turns counter-clockwise and may be difficult to remove. It may be necessary to insert a screw driver or other tool between the softner-holder tabs to enable you to apply sufficient torque to protect the factory seal. 9. Remove the gasket (not shown) and the water softener. When remove softener and conjoint hoses, some salt water will flow out. Make sure to wipe off the water. 10. Reverse the above procedure to install. ⚠ **Caution** When reassemble it, ensure to place the seal (gasket) on original location. After replace it and complete SVC, operate a rinse program once to check the normal operation.

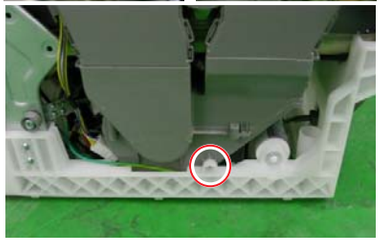
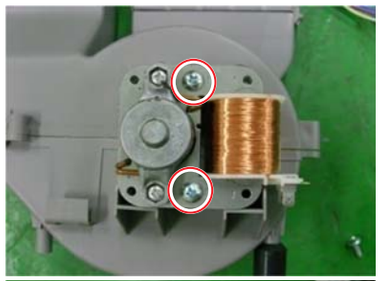
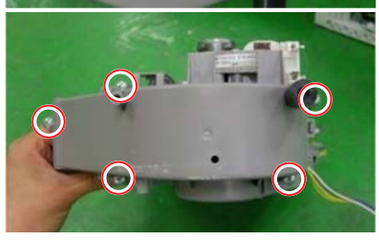
Part	Photo	Description
Water Valve	The water valve is electrical controlled and solenoid operated. The flow of water is controlled by a rubber flow washer capable of maintaining a flow of 4±5% liters per minute with incoming water pressure of 0.02~1Mpa.The water valve is mounted to the back hinge support of the dishwasher.	
		1. Disconnect power. 2. Release the water inlet hose.
	  	3. Separate projectile that is fixing Water Supply Hose and Drain Hose. 4. Remove the Cover Base. 5. Remove the Connector. 6. Remove the clamp and disconnect the hose (to air breaker) from the water valve. 7. Reverse the above procedure to install.

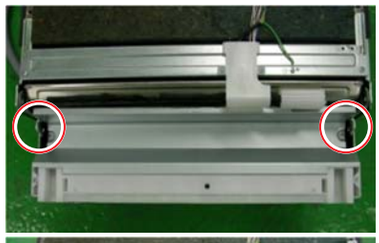
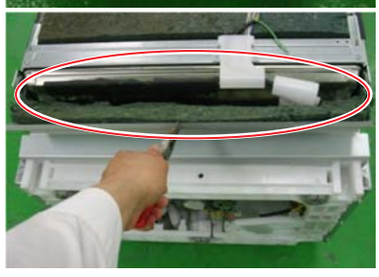
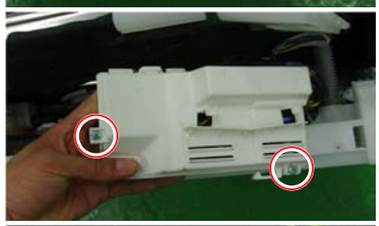
Part	Photo	Description
Drain Pump	The drain pump assembly is located under the tub at the left, rear corner. The drain pump operates on 230VAC, to remove any water in the dishwasher sump. The drain pump forces the water out the drain line. A check valve flapper on the drain pump prevents the dirty water from reentering the sump.	
		1. Drain up the water in the dishwasher, and disconnect the power supply. Make sure to remove remain water in the dishwasher. If not, wet the floor. To prevent drop water on the floor, we recommend to lay the towel before laying down. 2. Remove the cover base. 3. Label and disconnect the two terminal lugs from the drain pump. 4. Separate rotating Drain Pump to right. Take care lest hook in Drain Pump at Drain Pump separation should break and separates.
Drain Hose		1. Push the drain hose from the cover-lower rear to take it off. 2. Remove the clamp from the Drain hose.

Part	Photo	Description
Motor BLDC pump (continued)		1. Disconnect power. 2. Remove the cover base.
	 	⚠ **Caution** Motor BLDC pump is connected with many hoses and wires. When disassemble & reassemble, make a caution.
	  	3. Separate projectile that is fixing Water Supply Hose and Drain Hose.
		4. Remove the clamp from the sump interconnect hose.

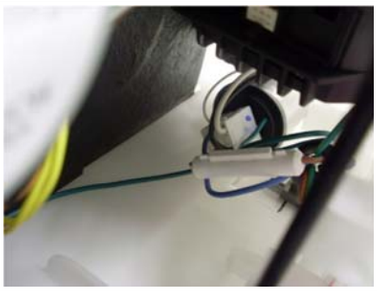
Part	Photo	Description
Motor (wash) Pump Assembly		5. Pull the motor mount back far enough to clear the motor tab, work the motor from the attaching hoses, and remove the motor pump assembly from the dishwasher. 6. Reverse the above procedure to install
Turbidity sensor		1. Disconnect power. 2. Remove the cover base. 3. Disconnect the terminal to turbidity sensor.
		4. Take care and pulls lest hook should break and separates.
Thermistor		1. Disconnect power. 2. Remove the outside panel and tray bottom. 3. Disconnect the terminal to thermistor at side of the sump . 4. Remove the 2 screws of thermistor. 5. Pull out it carefully. 6. Reverse the above procedure to install.

Part	Photo	Description
Pressure switch		1. Disconnect the wire connector. 2. Take care lest hook should break and separates.
Sump Assembly		1. Remove the Cover Base. 2. Remove the Wash Pump. 3. Remove the Drain Pump. 4. Remove the Drain Hose. 5. Remove the Water Softener and Sump and linked hose.
	  	6. Remove the screw in Power Zone Duct. 7. Remove the Lower Hold Nozzle. ⚠ **Caution** Counterclockwise fasten & Clockwise loosen.
		8. Remove the Filter and Micro Filter. 9. Remove the Duct. 10. Remove the screw that is fixed to Sump.

Part	Photo	Description
Dry Assembly (continued)		1. Remove the side panel.(Right)
		2. Open the door and remove the nut from tub(right). 3. Remove the 1 screw from the base plate. 4. Disconnect the wire terminal from Dry unit.
		5. Remove the dry unit. 6. Disconnect the 2 wires from the Fan motor
	 	7. Remove the 2 screws from the Fan motor. 8. Remove the 5 screws from the Fan motor cover.

Part	Photo	Description
Dry Assembly	 	9. Remove the fan motor cover.
Main PBA	 	1. Remove the 4 screws from the frame front. 2. Remove the frame front.
	   	3. Remove the 2 screws from the base. 4. Remove the 2 screws from the cover PBA.

Part	Photo	Description
Fuse service		1. Remove the 1 screw holding the power cord.
		2. Pool out the power cord.
		3. Pool out the Fuse holder.
		4. Open the fuse holder and exchange the fuse.

Part	Photo	Description
Noise filter service		1. Remove the side panel.(Right) 2. Remove the 1 screw.(Ground wire)
		3. Remove the nut. You can use the long-nose pliers.
		4. Disconnect the 2 wire connectors from the noise filter.
		5. Remove the cover base. 6. Exchange the noise filter.

Part	Photo	Description
Synchronous motor & Half load switch service		1. Remove the cover base. 2. Disconnect the connector from the synchronous motor.
		3. Remove the 2 screws.
		4. Remove the Synchronous motor.
		5. Disconnect the connector from the Half load switch.
		6. Push the hook and pull out the half load switch.

3-3. CHECKPOINTS AFTER FINISHING A SERVICE

1. **Check the safety device**
   Check the operation of the door lock switch. Make sure that it is locked while the dishwasher is running and that it is unlocked when the dishwasher stops.

2. **Use authenticated parts only**
   If any part is not authenticated, replace it with an authenticated part.

3. **Handling wires**
   Check if any wires are loose or too tight, if they are connected correctly, if they are well bound with tape, and if they are properly clamped.

4. **The state of screws and nuts**
   Check if the screws and nuts are fastened correctly.
   Check whether they are fastened with the specified torque.

5. **Remove foreign material**
   Check whether any foreign material such as soil, wire scraps and screws are in the dishwasher. (Check whether any foreign material is entering through the sump into the disposer.)

6. **Check for water leakage**
   Check whether there is water leakage from the hose connector, door, case sump (drain motor, circulation motor, heater, thermistor, turbidity sensor, distributor motor), and the water supply/drain hoses.

7. **Check the power cable**
   Check if there is any damage to the power cable or power outlet. Check that the power capacity is appropriate.

8. **Check leveling**
   Check whether the dishwasher is level.

9. **Check the installation location**
   Check whether the installation location is flat and stable.

MEMO

4. TROUBLESHOOTING

4-1. ERROR CODES

CODES	When occur	Symptom	POSSIBLE CAUSES
4E	• When the number of detected water supply pulses is less than 10 within 20 seconds after water is supplied. • When the number of detected water supply pulses is less than 100 within 80 seconds after water is supplied • When the target water level is not reached within 5 minutes after water is supplied.	• If an error has occurred when the number of detected water supply pulses is less than 10 within 20 seconds after water is supplied, the water supply valve is turned on once and waits. • All driving parts except for the drain part are turned off and draining (20 seconds ON/ 5 seconds OFF) is performed for 3 minutes.	• The water supply pressure is low. • The water supply valve is closed. • The aqua stop is out of order. • The case brake fails to detect the pulse.
4E-1	• When the water temperature for the cycle is 80°C or higher in the water supply section.	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• Hot water (over 80°C) is supplied.
5E	• When the high pressure switc-2 (HPS) does not detect a low level after the drain pump operates for a predetermined period of time.	• The driving part stops.	• A foreign object has entered the drain pump and the pump is stuck. • The drain pump is out of order. • The heater is incorrectly connected.
PE	• When the location is not detected for 2 minutes after the synchronous motor operation. (In Test Mode, when the location is not detected for 1 minute.) • In the cleaning section, when the location is not detected for 3 minutes.	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• The synchronous motor is out of order. • The location in the cam is incorrect.
tE	• When the temperature sensor data output is equal to or greater than approximately 4.95V or is equal to or less than approximately 0.05V. • When the water temperature is detected as equal to or less than -3°C for 30 seconds in succession during the cleaning the heater operation.	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• The thermistor is out of order.
HE-1	• The start temperature is saved 30 seconds after heating starts. Thereafter, if the temperature change is equal to or less than 4 °C for 10 minutes, the heater relay is turned off for 1 second and then restarts heating. Then, if the temperature change is equal to or less than 4°C for 10 minutes again, an HE-1 error occurs.	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• The heater is out of order. • The heater is improperly connected.
HE	• When the temperature is measured as equal to or greater than 80°C for 3 seconds.	• The driving part stops and the main relay is turned off.	• The heater is out of order. • The thermistor is out of order.

CODES	When occur	Symptom	POSSIBLE CAUSES
bE-2	• When the button is pressed and held for 30 continuous seconds or longer.	• The driving part stops.	• The touch button is out of order. • An object is on the touch button.
bE-3	• When IC I2C communications between the Sub PBA and the touch button fails.	• The driving part stops.	• The touch button is out of order. • The sub PBA or touch button PBA is not properly connected.
AE	• When communications between the main PBA and the sub PBA fails for 24 seconds. (In Test Mode, communication fails for 6 seconds.)	• The driving part stops.	• The main PBA or sub PBA is out of order. • The communications connection for the main PBA or sub PBA is not properly connected.
LE	• When the water leakage sensor data is equal to or less than 3V for 3 seconds.	• If sensor data over 3V is detected after draining (20 seconds on/5 seconds off) is performed for 3 minutes, the drain pump is turned off. If data over 3V is detected, draining is performed for 3 minutes and then the sensed data is checked again.	• There is a water leak.
oE	• When the overflow sensor data is equal to or less than 3V for 3 seconds.	• If sensor data over 3V is detected after draining (20 seconds on/5 seconds off) is performed for 3 minutes, the drain pump is turned off. If data over 3V is detected, draining is performed for 3 minutes and then the sensed data is checked again.	• The case brake fails to detect the pulse. • The aqua stop is out of order.
1E	**Condition 1)** • When the high pressure switch (HPS) does not measure a high level after the completion of the water supply. **Condition 2)** 1) If the high pressure switch measures a low level for 3 continuous seconds while a wash is performed, the HPS is checked again. If a high level is detected, a normal operation is performed. If this is repeated 5 times, an 1E error occurs. 2) If the high pressure switch measures a low level for 3 continuous seconds while a wash is performed, the HPS is checked again. If a low level is detected, additional water is supplied for a predetermined period of time. If a low level is measured even after additional water is supplied twice, an 1E error occurs.	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• The motor is out of order. • The HPS is out of order.

CODES	When occur	Symptom	POSSIBLE CAUSES
3E	• If communicating with the motor fails for 10 seconds, the BLDC Power Relay is turned off for 5 minutes and is then turned on again. If communicating fails again for 10 seconds after turning the BLDC Power Relay on, this error occurs (only for BLDC motor type models). (This error does not occur when the door is open.) (In Test Mode, this error occurs if communicating fails for 10 seconds.)	• Draining (20 seconds on/5 seconds off) is performed for 3 minutes.	• The BLDC motor is out of order. • The BLDC motor connector is not properly connected.

⚠ **WARNING**
If leakage problem occurs, turn off the main water supply before calling a service. If there is water in the base pan because of an overfill or small leak, the water should be removed before restarting the dishwasher.

4-2 TEST MODE

4-2-1 TEST MODE

Item	Description
Entering Test Mode	• Press the Sanitize, Half Load and Power keys at the same time to enter Test Mode.
Changing the mode	• Touch button type: Press the Intensive key to change the mode: (L1 : At → L2 : Ft → L3(Lc) → L4(Ld) → L5(Hd) → L7 → L8 → L9 → LA → Lb → At →.. (Repeats)) • Tact button type: Press the Course key to change the mode: (L1 : At → L2 : Ft → L3(Lc) → L4(Ld) → L5(Hd) → L7 → L8 → L9 → LA → Lb → At →.. (Repeats)) • If the mode is changed, it automatically starts. However, if the door is open, it does not start automatically and a “dE” error occurs.
Displaying all	• If the product enters Test Mode, all product displays are turned on for 1 second. However, if the Sanitize, Half Load and Power key combination is held down continuously, all displays are turned on continuously. • If no key is pressed, the version is displayed.
Displaying the main program version and the sub PBA option number.	• The information is displayed as 2 digits in turns : The micom code (first 2 digits) → version (latter 2 digits) → sub PBA diode option number. E.g.) Main Micom Version: Lq25 Sub PBA: FBI Premium model It is displayed as follows: Lq → 25 → 07. * The Sub PBA option number for each model 00 : FS BETTER 01 : FS BEST 02 : SBI BETTER 03 : SBI BEST 04 : SBI PREMIUM 05 : FBI BETTER 06 : FBI BEST 07 : FBI PREMIUM
Displaying the sub program Version.	• The sub micom version is displayed as 2 digits in turns while the Start key is pressed down when the option is displayed. A. Touch button type sub: LU XX B. Tact button type sub: nh XX
L1 : “At”	• “At“ is displayed. • Auto Test Mode. (This is the mode used for the automated line test.)
L2 : “Ft”	• “Ft” is displayed. • Draining (25 seconds on / 2 seconds off) is performed for 30 seconds. • The high pressure switch (HPS) level is checked 5 seconds after the motor operates (at 2800 rpm): If a high level is detected, a 5E error occurs. If a low level is detected, water is supplied. • Water is supplied for 333 pulses. • If no water is supplied, a water supply error (4E) occurs. • After the completion of the water supply and the HPS high level is not detected, an 1E error occurs. • If the water supply is complete, the turbidity sensor runs. (It increases the PWM duty until it reaches 3.2V) • During PWM, “Ft” and the turbidity sensor voltage data are displayed in turns (e.g. 3.2v→32). • If the target voltage is not measured even after the max duty, an alarm sounds and “E3” is displayed.

Item	Description
L3(Lc)	• Runs the circulation motor. (BLDC: 2800 RPM, AC motor: High). • If the HPS high level is detected, “Lc” is displayed. If the HPS low level is detected “L3” is displayed. • The middle rotor runs for 1 minute → The lower + middle rotors run for 1 minute → The lower + upper rotors run for 1 minute.
L4(Ld)	• Runs the circulation motor. (AC motor: Low, BLDC: 2800 RPM). • If the HPS high level is detected, “Ld” is displayed. If the HPS low level is detected “L4” is displayed. • The middle rotor runs for 1 minute → The lower + middle rotors run for 1 minute → The lower + upper rotors run for 1 minute.
L5(Hd)	• Circulation motor (BLDC : 2800 RPM, AC motor : LOW) runs. • HPS: If a high level is detected, the heater is turned on. If a low level is detected, the heater is turned off. (“L5” is displayed.) • If the heater runs for 3 minutes, the heater is automatically turned off. • While the heater runs, "Hd“ and the measured temperature are displayed in turns. • If the temperature is equal to or higher than 60°C, the heater is turned off. • When starting, the dispenser runs for 1 minute. • The middle rotor runs for 3 minutes → The lower + middle rotors run for 3 minutes → The lower + upper rotors run for 3 minutes.
L7	• The circulation motor runs (BLDC: 2800 RPM, AC motor: High). • The synchronous motor runs by alternating the location between the power zone left and the power zone right at 1 minute intervals.
L8	• Runs the vent motor, the drying heater and the thermal actuator of the dryer unit.
L9	• Water is supplied until an overflow is detected. • If an overflow is detected, “oF” is displayed.
LA	• Runs the drain pump for 60 seconds (25 seconds on / 2 seconds off). • After 60 seconds, the motor runs for 5 seconds and the HPS level is checked. At this time, if the HPS high level is detected, a 5E error occurs.
Lb	**[Device Test Mode]** 1. Press the HALF LOAD key : Drying heater → Fan → Thermal Actuator → All Off 2. Multi Tabs : Drain Pump → Motor (AC motor: LOW, BLDC: Run) → Motor (AC motor: HI, BLDC: Run) → OFF 3. Press the Reservation key. : Synchronous Motor → Cold Water → Heater (runs up to 2 seconds only) → OFF

4-2-2 Data Display Mode

Item	Description	Display
Entering Mode	To enter the mode	When the power is on, press and hold the Half Load and Delay Start key combination for 5 seconds. (To exit, press the key combination again.) (This allows you to enter Data Display Mode and check the current sensor status.)
Changing Mode	To change the mode	The mode is changed whenever the Half Load key is pressed. (d0 : main micom version → d1: sub model option → d2 → d3 → d4 → ….. → dC → .. (Repeat)) • If 5 minutes have passed in display mode, the unit automatically returns to normal mode.
d0	Version display mode	• Displays the 2 digits of the main micom version in turns. (E.g. “Lq” → “XX”) • While the Start key is held down, the sub micom version is displayed as 2 digits in turns.
d1	SUB PBA model option display mode	• Sub model option display * The Sub PBA option number for each model. 00 : FS BETTER 01 : FS BEST 02 : SBI BETTER 03 : SBI BEST 04 : SBI PREMIUM 05 : FBI BETTER 06 : FBI BEST 07 : FBI PREMIUM
d2	High pressure switch check	• hI : High Level • Lo : Low Level (E.g. “d2” and “Low” are displayed in turns.)
d3	Synchronous motor location signal check according to the operation of the synchronous motor	1: Middle 2: Lower + Middle 3: Power Zone Left 4: Lower 5 : Power Zone Right 6: Lower + Upper 7: Middle (E.g. “d3” and “Low” are displayed by turns.)
d4	Water Temperature	Displays “d4” → 2 digits of the temperature → decimal places. (E.g. In the case of 24.5, “d4” → “24” → “-5” are displayed in turns.)
d5	FlowMeter Pulse	Displays “d5” → number tens → number of ones. (E.g. In the case of 167 pulses, “d5” → “16” → “-7” are displayed by turns.)
d6	Turbidity AD Data	Displays “d6” → the first decimal place → the second decimal place. (E.g. In the case of 4.05V, “d6” → “40” →”-5” are displayed in turns.)
d7	Overflow Sensor Volt	Displays “d7” → the first decimal place → the second decimal place. (E.g. In the case of 4.05V, “d6” → “40” →”-5” are displayed in turns.)
d8	Water Leakage Sensor Volt	Displays “d8” → the first decimal place → the second decimal place. (E.g. In the case of 4.05V, “d6” → “40” →”-5” are displayed in turns.)
d9	Target RPM	Displays 2 digits in turns.
dA	Current RPM	E.g. In the case of 2000rpm, “dA” → “20” → “00”
db	Cycle Cnt	Displays 2 digits in turns. E.g. For 65525 cycle, db → 6 → 55 → 25 are continuously displayed in turns.
dC	Water supply pulse counter used in total.	The water supply pulse counter is reset if the water softener function execution is complete.

4-2-3 Wash cycle table

Program	Cycle	Cycle Selection Information	Running time (min)	Water (ℓ)	
Intensive 70°C		Heavily soiled items include pots and pans	148	17	
Auto 40 ~ 65°C Daily auto (DW-∗G∗∗∗∗/XSA)		Lightly to heavily soiled daily using items, automatic detection of the amount of soils	90 ~ 148	9.1 ~17	
Express 65°C		Normally soiled daily using items, with short cycle time	87	11.6	
ECO 45°C Normal (DW-∗G∗∗∗∗/XSA)		Normally soiled daily using items, with reduced energy and water consumptions	145, 160 (DW-SG520, D149)	10	DW-BG97 BG77 (D170) SG97 SG72 (D175) FG72
				11.8	DW-FG520∗/XSA
				12	DW-BG57 SG52 FG52 (D147,D149) DW-FS720∗/XSA
Quick 50°C		Lightly soiled with very short cycle time	34	10.5	
Delicate 40°C		Lightly soiled delicate items	83	10.1	
Prewash		For dishes that need to be rinsed	17	3.7	
Normal 65 °C (DW-FG520, D147) Daily intensive (DW-∗G∗∗∗∗/XSA)		Normally soild daily using items	-	-	

4-3 MALFUNCTION TABLE

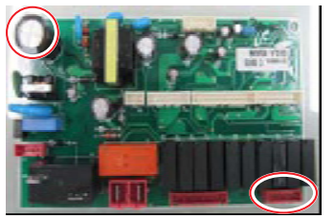
Error type	Error mode	Checking method	Corrective actions
Water supply error	4E	1. Check whether the faucet is open.	Open the faucet.
		2. Check whether the water supply has been cut off.	After wait until the water supply resumes and turn off the power. After the water supply resumes, turn on the power.
		3. Check whether any foreign material is in the Water Supply Line and the Aqua Stop Valve filter.	Remove the foreign material, clean the filter in Aqua stop valve with a brush.
		4. Check the connection for the Aqua Stop Valve connector.	Reconnect the Aqua Stop Valve connector.
		5. Check whether the coil in Aqua Stop Valve is conductive (Remove the connector before measuring.) • Normal: Approx. 3780Ω ± 10%	• Faulty: Replace the Aqua Stop Valve.
		6. Check whether the water supply stops, after water is supplied for 10 seconds.	• Faulty: Replace the Aqua Stop Valve and Flow Meter.
		7. Check whether the water supply stops after water is supplied for 80seconds or 5 minutes.	Check the water supply pressure. (> 0.5bar) • Faulty: Replace the Aqua Stop Valve and Flow Meter.
		8. Check whether the Aqua Stop Valve is operating normally in the Main PBA. • Check the Aqua Stop Valve Relay in Main PBA. : Check the voltage between the yellow wire of the CN5 and the yellow wire of the MAIN PBA RY2 Relay connector • Normal : 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy. • Normal: Replace the Aqua Stop Valve
		9. Check the Power Relay.	See the “Power Relay error”.
Water supply error	4E-1	1. Check the hot water connections for the Aqua Stop Valve.	Adjust the hot water supply so that the temperate of the supplied water is less than 80˚C
		2. Check the operation of the “Thermistor”.	See the “tE1 error”.

Error type	Error mode	Checking method	Corrective actions
Drain error	5E	1. Check whether there is any foreign material in the Drain Hose and Drain Pump.	Remove the foreign material in the Drain Hose and Drain Pump.
		2. Check the connections for the Drain Pump connector.	Reconnect the Drain Pump connector.
		3. Check the operation of the high pressure sensor. • Confirm “d3” Mode in Data Display Mode • Faulty: Replace the high pressure sensor.	See the Data Display Mode
		4. Check whether the Drain Pump coil is conductive. (Remove the connector before measuring.) • Normal: Approx. 167Ω ±10%	• Faulty: Replace the Drain Pump.
		5. Check the operation of the Drain Pump Relay : Check the operating voltage between the green wire of the Main PBA CN5 connector and the yellow wire Power Relay connector • Normal: 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy. • Normal: Replace the Drain Pump.
Key input Error (Tact SW model)	bE-2	Check whether there is condensation on the PBA. • Check whether tact switches are pressed.(SW1~SW8) • Normal: No condensation	• Faulty : Remove any condensation . • Normal : Replace the Control Panel assy.
Key input error	bE-2	Check whether there is condensation on the PBA. • CN2 and CN4 SUB PBA connector • CON1 LEFT/RIGHT TOUCH PBA connector	• Faulty: Remove any condensation and moisture. • Normal: Replace the Control Panel assy. (Sub PBA, Touch, Sub Wire)
	bE-3	• Normal: No condensation	

Error type	Error mode	Checking method	Corrective actions
Heater error	HE-1	1. Check the connections of the Heater connectors.	Reconnect the Heater connectors.
		2. Check the resistance between both ends of the Heater. : Check the resistance between both ends of the Heater directly, or check the resistance between the red wire of the Heater Relay and the black and yellow wires of the Power Relay, respectively. • Normal: Approx. 25.3Ω±10% • Check after disconnect circuit breaker or power cable.	• Faulty: Replace the Heater.
		3. Check the connections of the Heater Relay in Main PBA. : Check the voltage between the red wire of the Heater Relay on the base and the black and yellow wires of the Power Relay. • Normal: 220V ~240V (while operating)	Reconnect the Heater Relay connectors.
		4. Check the driving signals for the Heater Relay. : Measure the voltage between pin 1(D12 Anode side) of the Main PBA RY1 relay and pin 11 (blue) of the CN12 connector. • When the Heater is off : 10.5 to 13V • When the Heater is operating : < 0.5V	• Faulty: Replace the Main PBA assy.
		5. Check the Power Relay.	See the “Power Relay error”.
Heater Overheat error	HE	1. Check the operation of the Thermistor.	See the “tE Error”.
		2. Check the Heater Relay.	See the “HE-1 Error”.
Leakage error	LE	Check whether there is any trace of water leakage in the shutter. • Normal: No water leakage trace	• Faulty: Check the leakage location. Replace the faulty part.

Error type	Error mode	Checking method	Corrective actions
Half load error	PE	1. Check the connections for the Distributor Motor and Micro Switch connectors.	Reconnect the Distributor Motor and Micro Switch connectors.
		2. Check whether the coil in Distributor Motor is conductive. : Remove the connectors before measuring. • Normal: Approx. 11.1 ~ 12.3kΩ	• Faulty: Replace the Distributor Motor.
		3. Check the position sensing operations when turning the Micro Switch on and off. (Use L3 line test mode.) Check the conduction between the brown wire and the yellow wire. • Micro switch On: Short • Micro switch Off: Open • Micro Switch sign alters in ON/OFF state. • It is NG if keep in ON or OFF state for 24 seconds. * Do not supply with water and test.	• Faulty: Replace the Micro Switch for sensing positions. • Normal: Replace the valve distributor and CAM switch.
		4. Adjust Cam A'ssy and Find the faulty.	• Faulty: Replace Cam A'ssy.
		5. Check whether half load is operating normally. • Check the half load operation • Normal: 220V ~ 240V • Check the operation of Distributor Motor Relay. : Check the operating voltage between the 7pin(orange) wire of the Main PBA CN5 connector and the yellow wire of the MAIN PBA relay(RY2) connector. • Normal: 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy.
		6. Check the Power Relay.	See the "Power Relay error".
Overflow error	oE	1. Check the connections for the Overflow Sensor connector.	Reconnect the Overflow Sensor connector.
		2. Check whether the Aqua Stop Valve operates normally.	See "4E Error".
		3. Check whether water is supplied (even small amounts) in the intervals when the Aqua Stop Valve is not operating.	Remove foreign material from the Aqua Stop Valve. If you cannot remove the foreign material from the Aqua Stop Valve, replace it.
		4. Error occurrence after confirm Method 1, 2, 3 .	Assy Case Brake replace .

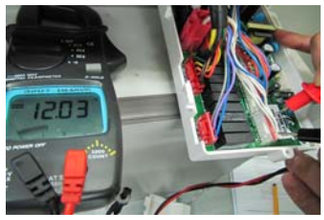
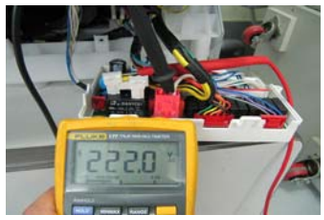
<table>
<tr><th>Error type</th><th>Error mode</th><th>Checking method</th><th>Corrective actions</th></tr>
<tr><td rowspan="2">Thermistor Error</td><td rowspan="2">tE</td><td>1. Check the connections for the Thermistor connector.</td><td>Reconnect the Thermistor connector.</td></tr>
<tr><td>2. Check whether the Thermistor is operating normally.
• Measure the voltage between both ends of the Thermistor.
• Normal: 0.05 to 4.95V
• Measure the resistance between both ends of the Thermistor : Remove the connector before measuring. (See the Table right.)
<table><tr><th colspan="2">Thermistor table</th></tr><tr><th>Temp(°C)</th><th>Resistance(kΩ)</th></tr><tr><td>5</td><td>125.814</td></tr><tr><td>10</td><td>98.360</td></tr><tr><td>15</td><td>77.480</td></tr><tr><td>20</td><td>61.477</td></tr><tr><td>25</td><td>49.120</td></tr><tr><td>30</td><td>39.510</td></tr><tr><td>35</td><td>31.985</td></tr><tr><td>40</td><td>26.053</td></tr><tr><td>45</td><td>21.347</td></tr><tr><td>50</td><td>17.590</td></tr><tr><td>55</td><td>14.573</td></tr><tr><td>60</td><td>12.136</td></tr><tr><td>65</td><td>10.157</td></tr><tr><td>70</td><td>8.541</td></tr></table></td><td>• Faulty: Replace the Thermistor.
• Nomral: Replace the Main PBA assy.
 </td></tr>
<tr><td rowspan="4">Main-Sub PBA Comm-unication error</td><td rowspan="4">AE</td><td>1. Check the connections between MAIN PBA CN7 connector and SUB PBA CN3 connector.</td><td>Reconnect the power plug</td></tr>
<tr><td>2. That Error is produced continuously after method 1 confirmation.</td><td>Replace: Sub-Wire</td></tr>
<tr><td>3. That Error is produced continuously after method 2 confirmation.</td><td>Replace: Sub-PBA</td></tr>
<tr><td>4. That Error is produced continuously after method 3 confirmation.</td><td>Replace: Main-PBA</td></tr>
<tr><td rowspan="4">High Pressure Switch error</td><td rowspan="4">1E</td><td>1. Check the connections for the high pressure sensor connectors.</td><td>Reconnect the high pressure sensor connectors.</td></tr>
<tr><td>2. Error occurrence after confirm Method 1.</td><td>• Faulty : Replace HPS replace.</td></tr>
<tr><td>3. Do it to act Test service test mode L2, L3 and motor (water) sound confirmation in L3.</td><td>• Faulty : Motor replace.</td></tr>
<tr><td>4. Problem occurrence to Method 1, 2, 3.</td><td>Main-PBA replace.</td></tr>
</table>

Error type	Error mode	Checking method	Corrective actions
AC Motor error	1E	1. Check the connections for the AC motor connectors • Hook of AC Motor Connectors confirms that was damaged • MAIN PCB CN4 connector	Reconnect the AC motor connectors.
		2. Check the Power Relay	See the “Power Relay error”.
		3. Error occurrence after confirm Method 1, 2 .	• Faulty: Replace the AC Motor
		4. Error occurrence after confirm Method 1, 2 .	• Faulty: Replace the Main PBA assy.
BLDC Motor Comm-unication error	3E	1. Check the connections for the BLDC motor connectors. • Hook of BLDC Motor Connectors confirms that was damaged. • MAIN PBA CN2 connector • MAIN PBA CN4 connector	Reconnect the BLDC motor connectors. 
		2. Check the Power Relay.	See the “Power Relay error”.
		3. Error occurrence after confirm Method 1, 2.	• Faulty: Replace the BLDC Motor.
		4. Error occurrence after confirm Method 1, 2.	• Faulty: Replace the Main PBA assy.

Error type	Error mode	Checking method	Corrective actions
No Power error	None	1. Check the connections for the power plug.	Reconnect the power plug.
		2. Check the voltage of the power outlet. • Nomral: AC 220V ~ 240V	Connect to a 220V ~ 240V power source.
		3. Check Power Key on state.	Try to touch the Power key.
		4. Check the connections for the Sub PBA and Touch PBA connector parts.	Reconnect the Sub PBA and Touch PBA connectors.
		5. Check the connection of the Main PBA connector CN9	Reconnect CN9
		6. Check the connections for the Sub PBA and Main PBA connector parts and	Reconnect the Sub PBA and Main PBA connectors.
		7. Check whether there is condensation on the PBA. • CN2 and CN4 SUB PBA connector • CON1 LEFT/RIGHT TOUCH PBA connector • Normal: No condensation	• Faulty: Remove any condensation and moisture. • Normal: Replace the Control Panel assy.
		8. Check whether the fuse is broken.	• Replace the fuse (15A).
		9. Check the DC voltage of the Main PBA.	See “Main PBA DC voltage error”.
		10. Check the wires of the Main PBA power part. • Measure the voltage between the black wire and the white wire of CN2. • Nomral: AC 220V ~ 240V	• Faulty : Check and replace the wires of the power part.
		11. In case of is No Power after Method ~10 action.	• Replace the Control Panel assy. (Sub, Touch, wire)
		12. In case of is No Power after Method 1~11 action.	• Replace the Main PBA.
No Power error	None	1. Check the connections for the power plug.	Reconnect the power plug.
		2. Check the voltage of the power outlet. • Nomral: AC 220V ~ 240V	Connect to a 220V ~ 240V power source.
		3. Check whether the fuse is broken.	Replace the fuse (15A).
		4. Check the wires of the Main PBA power part. • Measure the voltage between the black wire and the white wire of CN9. • Nomral: AC 220V ~ 240V	• Faulty: Check and replace the wires of the power part.
		5. Check Power Key on state.	Try to push the Power key.
		6. Check the connections for the Sub PBA and SUB wire. .	Reconnect the Sub PBA and SUB wire.
		7. Check the DC voltage of the Main PBA.	See “Main PBA DC voltage error”.
		8. Check whether there is condensation on the PBA. (FS model) • Check whether tact switches are pressed. (SW8) • Normal: No condensation	• Faulty: Remove any condensation • Normal: Replace the Control Panel assy.

Error type	Error mode	Checking method	Corrective actions
Display error	None	1. Check the connections for the Display LED connector part.	Reconnect the connectors for Display LED.
		2. Check the Display LED. (the top display of FBI model)	• Faulty: Replace the Display LED and Sub PBA.
Display error	None	1. Check the connections for the Display LED connector part.	• Reconnect the connectors for Display LED.
		2. Check the Display LED. (FS model)	• Faulty: Replace Sub PBA.
Dry function error	None	1. Check the wire connections for the Fan Motor.	Reconnect the Fan Motor connectors.
		2. Check the resistance of the Fan Motor coil.(Remove the connector before measuring.) • Normal: Approx. 145 Ω ±7%	• Faulty: Replace the Fan Motor assy.
		3. Check the resistance of the coil. (Remove the connector before measuring.) • Normal: Approx. 400 ~ 2000 Ω	• Faulty : Dry heater replace.
		4. Check the operation of the Fan Motor Relay : Check the operating voltage between the red wire of the CN5 connector and the yellow wire of the MAIN PBA relay(RY2) connector. • Normal: 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy.
		5. Check the operation of the Dry Heater Relay : Check the operating voltage between the 3 pin wire of the CN4 connector and the yellow wire of the MAIN PBA relay(RY2) connector. • Normal: 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy.
		6. After Method 1~3, if dry performance is bad.	Dry duct replace.

Error type	Error mode	Checking method	Corrective actions
Detergent is not dispensed.	None	1. Check whether detergent is inserted into the dispenser.	Check whether there is detergent in the Dispenser.
		2. Check the connections for the Dispenser connector.	Reconnect the Dispenser connector.
		3. Check the resistance of the Dispenser. (Remove the connector before measuring.) • Normal: Approx. 0.7 ~ 2kΩ	• Faulty: Replace the Dispenser.
		4. Check the operation of the Dispenser Relay : Check the operating voltage between the brown wire of the CN5 connector and the yellow wire of the MAIN PBA relay(RY2) connector. • Normal: 220V ~ 240V (while operating)	• Faulty: Replace the Main PBA assy.
Washing function error	None	1. Filter confirmation.	• Faulty:
		2. Check Rotors and ducts.	• Faulty: Replace Rotors and ducts
		3. Check the operation of the half load.	See “PE Error”.
		4. Check the operation of the Dispenser	See “Dispenser is not dispensed”.
The cycle does not start.	None	1. Check the connections for the Door Sensing Switch : Check the blue wire and the switch connected to the blue wire. • Normal: 10.5 to 13V (when the door is open) • Normal: < 1V (when the door is closed)	Reconnect the Door Sensing Switch Connector
		2. Check the connection for the Door Sensing Switch.	Reconnect the Door Sensing Switch Connector
		3. Check the operation of the Door Sensing Switch.(Remove the connector before measuring.) : Check the blue wire and the switch connected to the blue wire. • Normal: OPEN (when the door is open) • Normal: SHORT (when the door is closed)	• Faulty : Replace the Door Sensing Switch. • Normal : Replace the Main PBA assy.
		4. Check the operation of the Power Relay.	See “Power Relay Error”.

Error type	Error mode	Checking method	Corrective actions
Main PBA DC voltage error	None	Check the DC voltage of the Main PBA. • Measure the voltage between pin 1 of the main PBA CN7 connector and pin 2 of the CN7 connector. • Normal: 4.5V to 5.5V • Measure the voltage between pin 9 of the main PBA CN7 connector and pin 2 of the CN7 connector. • Normal: 10.5V to 13.0V	• Faulty: Replace the Main PBA assy. 
Power Relay error	None	1. Check the connections for the Power Relay connector : Start the cycle by pressing the Power key. when measure the operating voltage between the white wires of the Heater Relay, and the operating voltage between the yellow and yellow wires of the Power Relay. ⚠ Caution Check the color of the wires of the Power Relay and the Heater Relay. • Normal: 220V ~ 240V	Reconnect the Power Relay. 
		2. Check the door switch. : Check the white wire and the switch connected to the white wire. • When the door is open: The Door Switch is OFF. • When the door is closed: The Door Switch is ON • He Power Relay and the Heater Relay use a 12V line. If the switch is out of order, the Power Relay and the Heater Relay will not operate.	• Faulty: Replace the Door Switch.
		3. Check the driving signals for the power relay: Measure the voltage between pin 7 and pin 2 of the CN7 connector on the main PBA. • When the door is open or before the cycle starts. Normal: Normal: 1 V • After the cycle has started by closing the door and pressing the Power key. 10.5 to 13 V	• Faulty: Replace the main PBA assy.
		4. Check the operation of the Power Relay : Start the cycle by pressing the Power Key. Measure the operation voltage between the terminal (yellow wire + black wire) of the Power Relay and the terminal (white wire+ red wire) of the Heater Relay ⚠ Caution Check the color of the wires of the Power Relay and the Heater Relay. • Nomral: 220V ~ 240V	• Faulty: Replace the power relay.

MEMO

5. PCB DIAGRAM

5-1. DETAILED SPECIFICATION AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (MAIN PBA)

► This Document can not be used without Samsungs authorization.

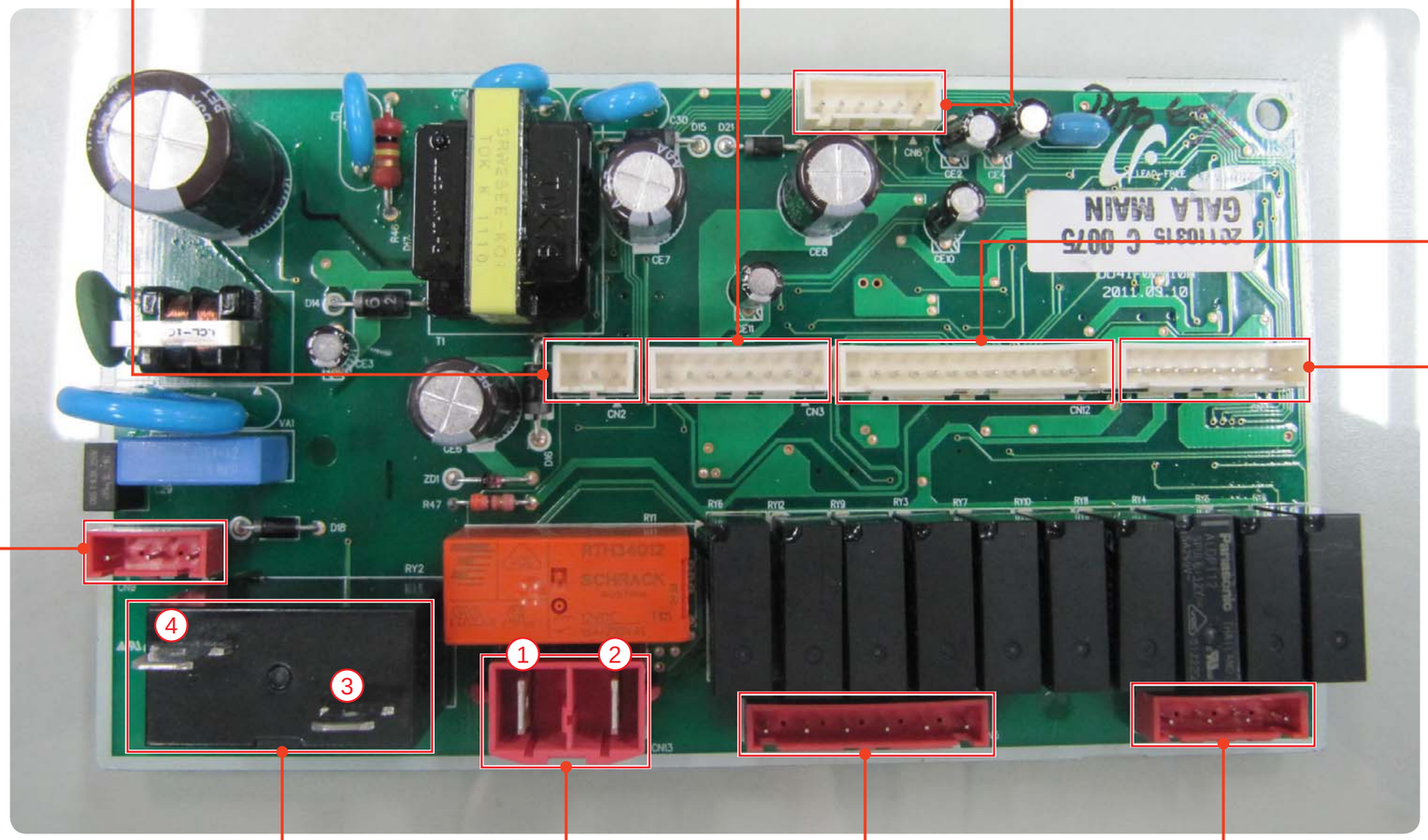
► **CN2 (BLDC)**
1. DC 5V
2. BLDC RX
3. BLDC TX

► **CN2 (BLDC)**
1. HALF SENSOR
2. DC GND
3. TURBIDITY RX
4. TURBIDITY TX
5. DC 5V
6. DC GND
7. RINSE SENSOR
8. DC 5V

► **CN12 (Micom Write)**

► **CON12**
1. DC 5V
2. WATER SOFTNER
3. DC GND
4. OVERFLOW
5. FLOW METER
6. DC 5V
7. LEAKAGE
8. THERMISTER
9. DC 12V
10. LED LAMP
11. DC GND
12. HIGH PRESSURE SWITCH
13. DC 5V

► **CON7 (SUB Communication)**
1. DC 5V
2. DC GND
3. DC 12V
4. MAIN BOARD RX
5. MAIN BOARD TX
6. SUB BOARD RESET
7. DOOR SWITCH
8. NC
9. DC 12V



► **CN14 (POWER RELAY)**
1. PBA Power (230V, AC2)
2. NC
3. NC
4. NC
5. PBA Power (230V, AC1)

► **CN14 (POWER RELAY)**
3. AC1
4. AC1-1

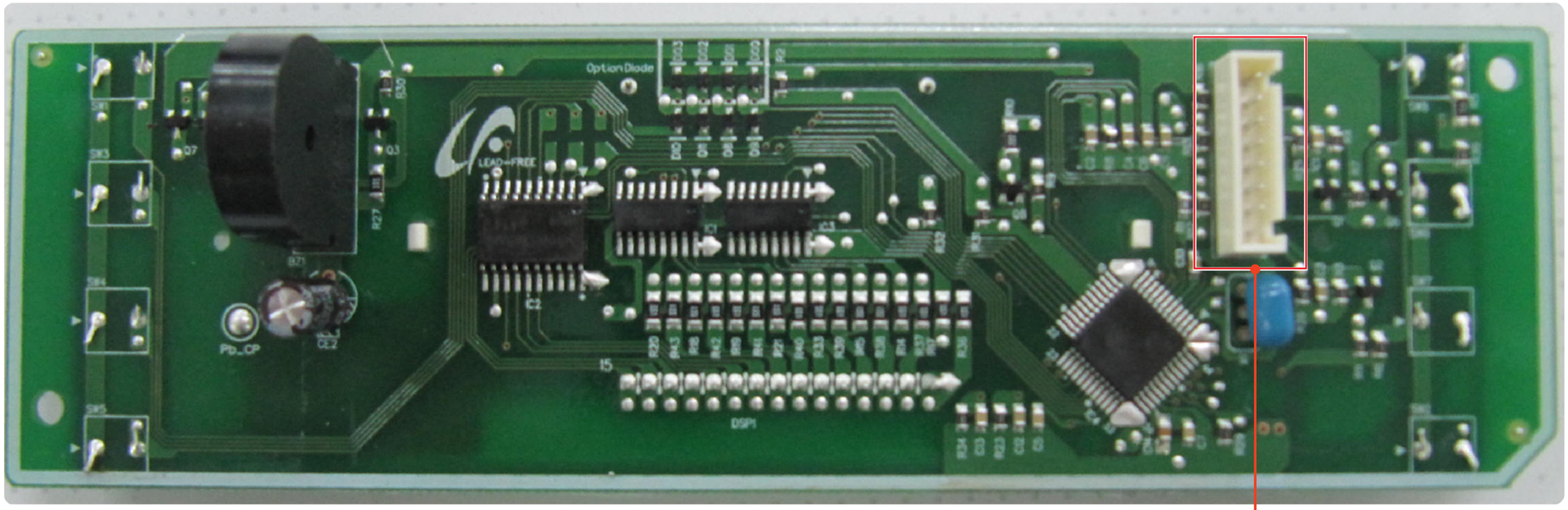
► **CN13 (HEATER RELAY)**
1. AC2
2. HEATER

► **CON5**
1. WATER SOFTNER
2. NC
3. DISPENSER
4. NC
5. VENT MOTOR
6. NC
7. SYNCHRONOUNS MOTOR
8. NC
9. AQUA STOP
10. NC
11. DRAIN PUMP

► **CON4**
1. THERMAL ACTUATOR
2. NC
3. DRY HEATER
4. NC
5. AC PUMP1
6. NC
7. AC PUMP2 (BLDC MOTOR)

5-2. DETAILED SPECIFICATION AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (FS SUB PBA)

► This Document can not be used without Samsungs authorization.

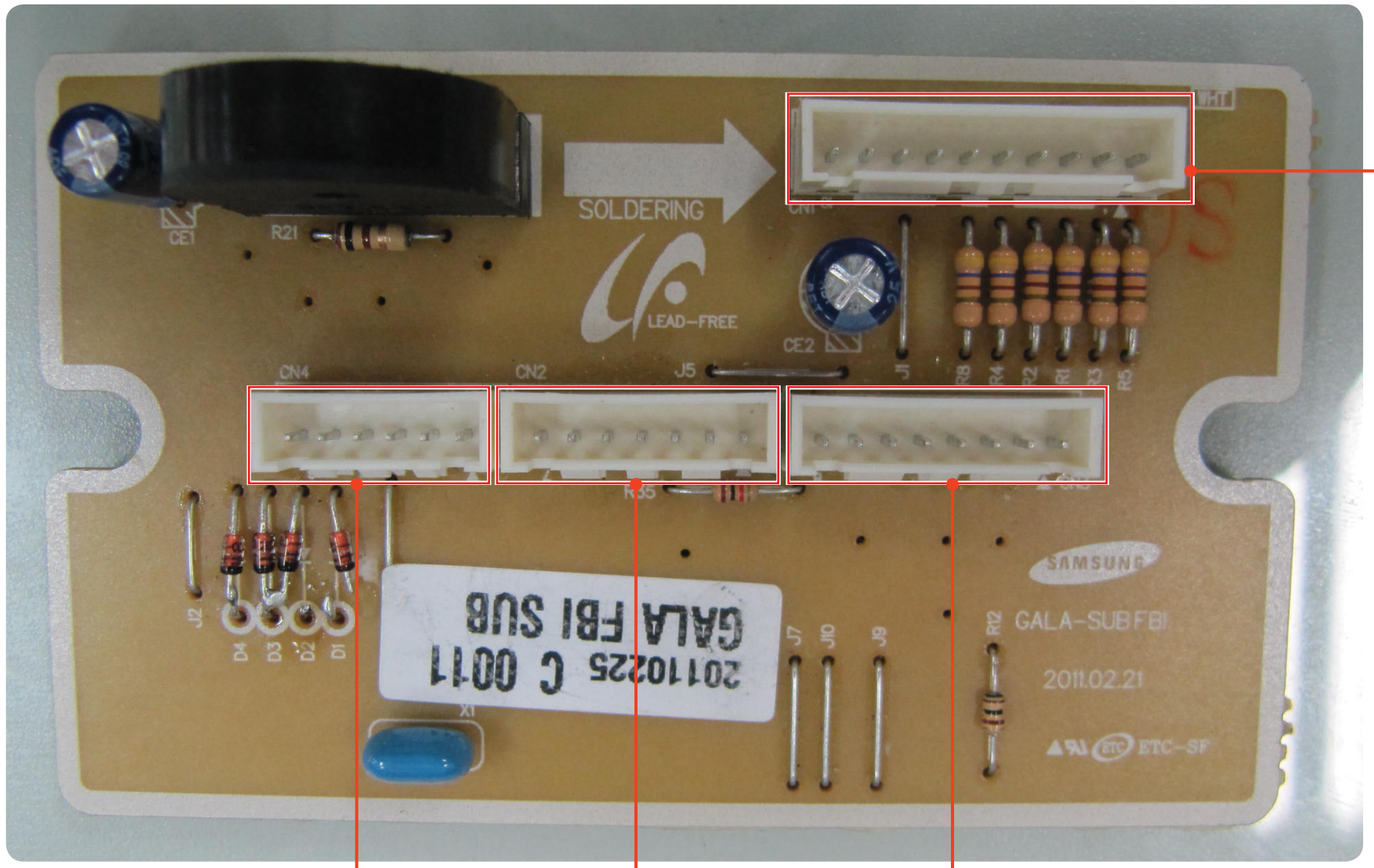


► **CN2**

1. +5V
2. GND
3. +12V
4. RXD
5. TXD
6. NRESET
7. -(N.C)
8. TEST

5-3. DETAILED SPECIFICATION AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (SUB PBA)

► This Document can not be used without Samsungs authorization.



► **CON3**
1. Common 1
2. Common 2
3. Common 3
4. Common 4
5. SEG6
6. SEG5
7. SEG4
8. SEG3
9. SEG2
10. SEG1

► **CON4**
1. +5V
2. GND
3. ST_SDA
4. ST_SCL
5. TOUCH_RESET
6. +12V

► **CON2**
1. +5V
2. GND
3. WAKEUP
4. ST_SDA
5. ST_SCL
6. TOUCH_RESET
7. +12V

► **CON3**
1. +5V
2. GND
3. +12V
4. RXD
5. TXD
6. NRESET
7. – (N.C)
8. TEST

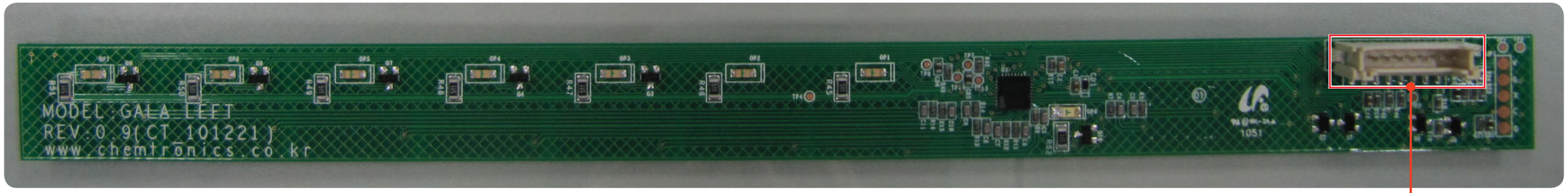
5-4. DETAILED SPECIFICATION AND DESCRIPTIONS FOR CONNECTORS AND RELAY TERMINALS (TOUCH PBA)

► This Document can not be used without Samsungs authorization.

[RIGHT TOUCH PBA]

► **CON1**
1. +5V
2. GND
3. ST_SDA
4. ST_SCL
5. XRES
6. +12V

[LEFT TOUCH PBA]

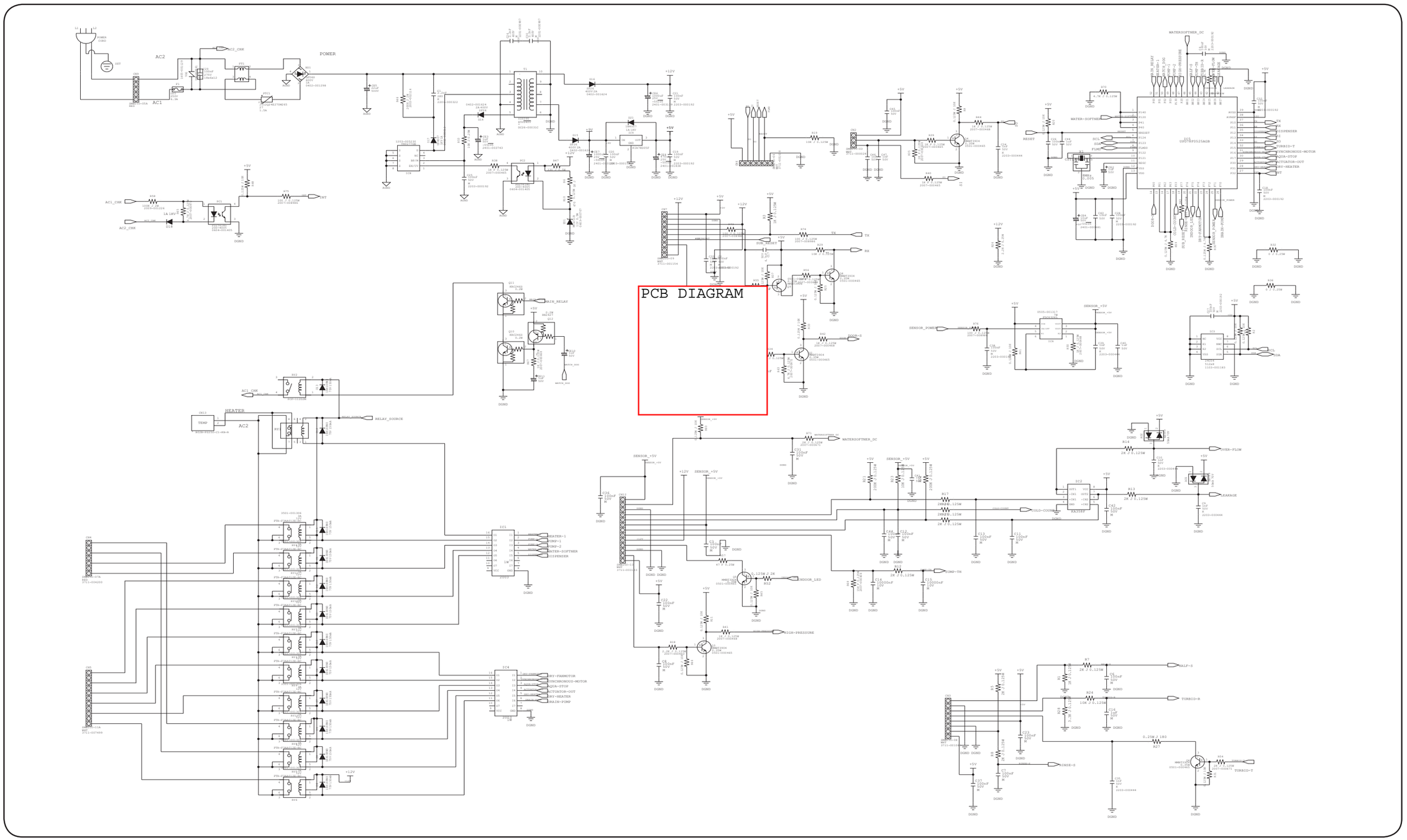


► **CON1**
1. +5V
2. GND
3. WAKEUP
4. ST_SDA
5. ST_SCL
6. XRES
7. +12V
8. – (N.C)

6. SCHEMATIC DIAGRAM

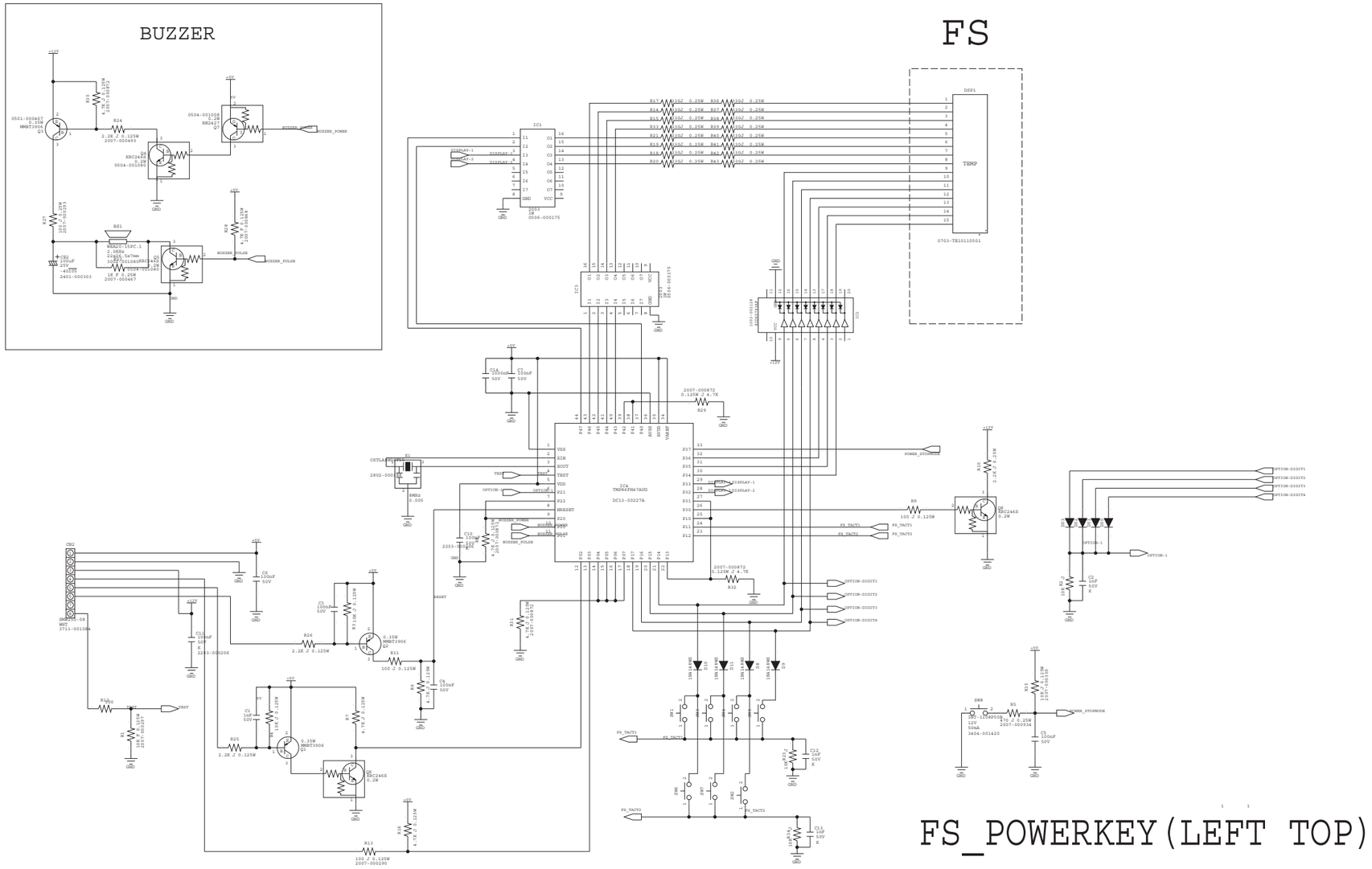
6-1. MAIN CONTROL

► This Document can not be used without Samsungs authorization.



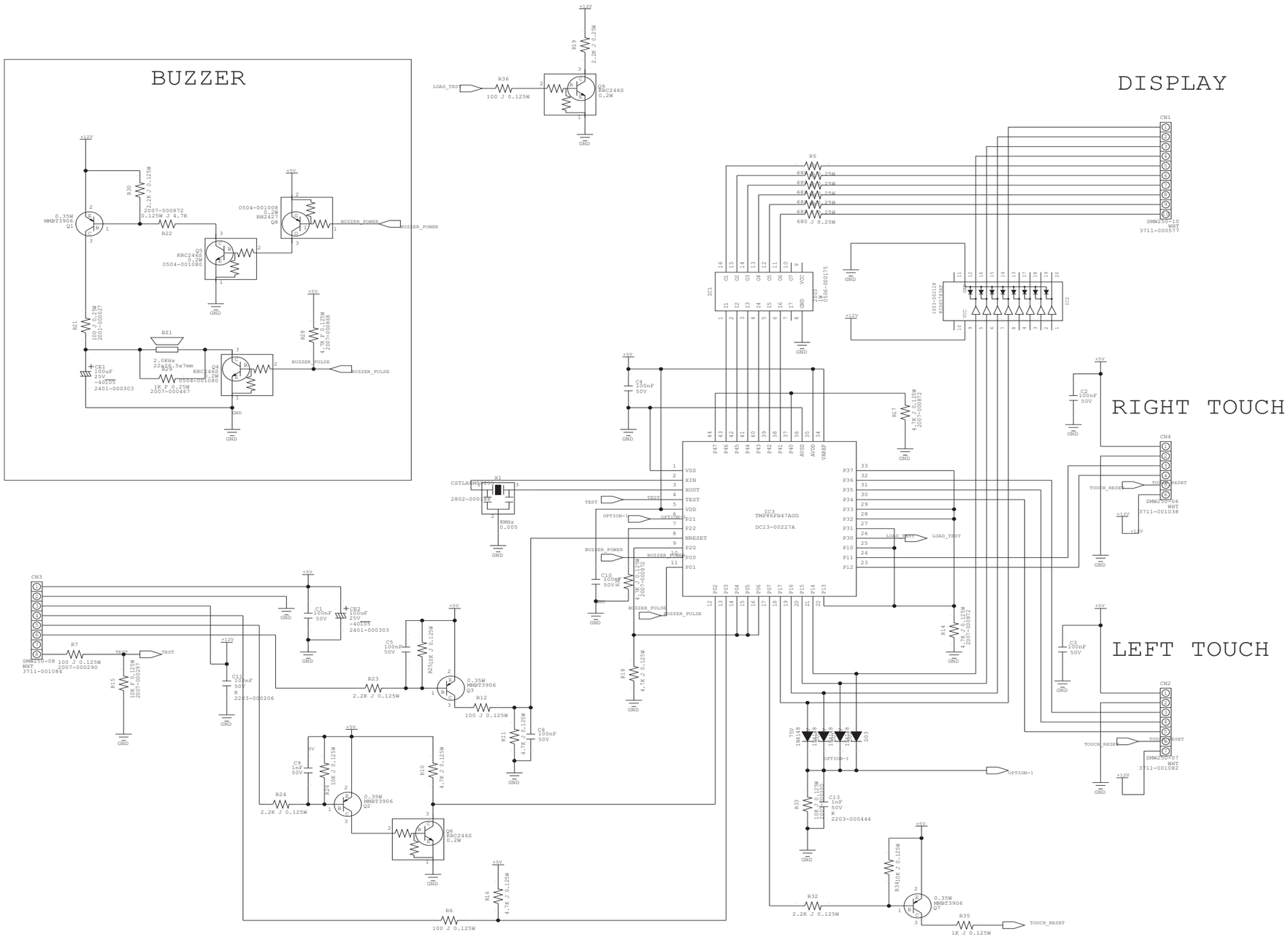
6-2. SUB PBA (FS MODEL)

► This Document can not be used without Samsungs authorization.



6-3. SUB PBA (FBI MODEL)

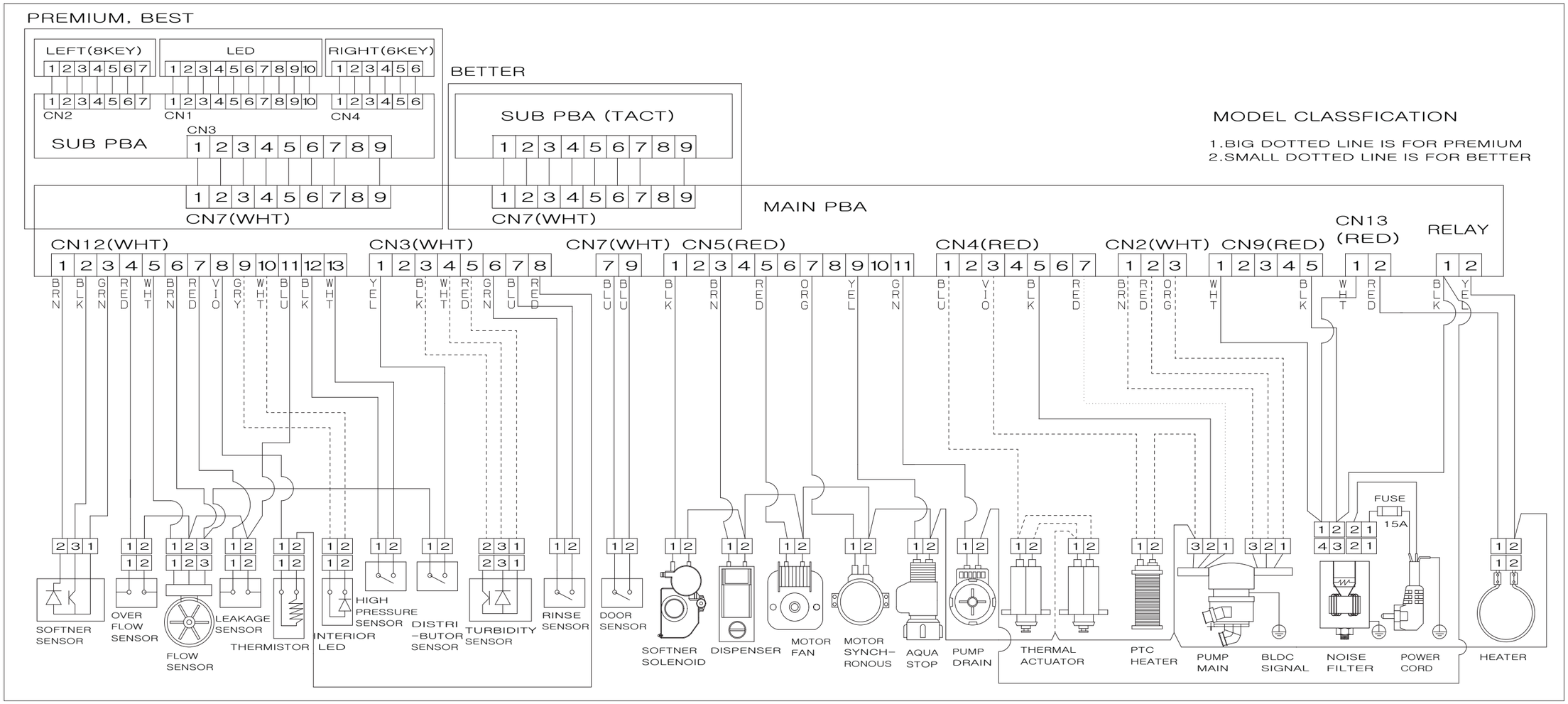
► This Document can not be used without Samsungs authorization.



6-4. WIRE DIAGRAM

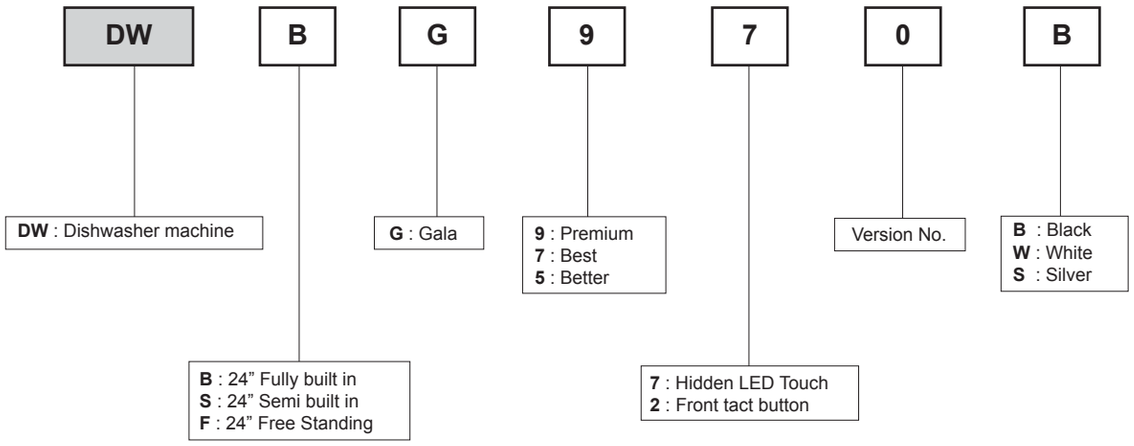
► This Document can not be used without Samsungs authorization.

SCHEMATIC DIAGRAM

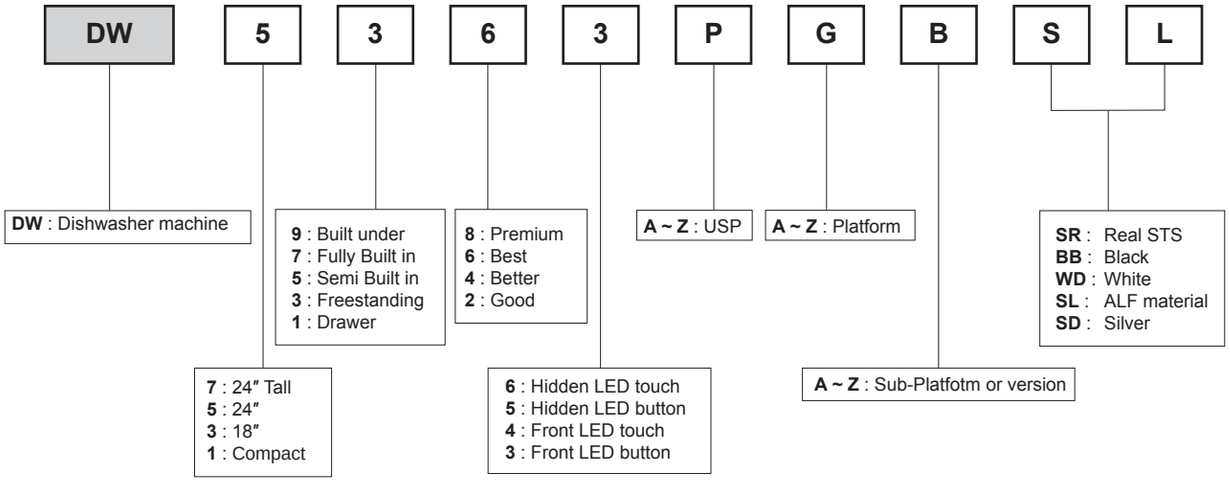


7. REFERENCE

7-1. MODEL NUMBER NAMING RULES



7-2. MODEL NUMBER NAMING RULES



7-3. TERMINOLOGY

1. **Wash pump Motor**
   A motor that sucks the water remaining on the floor of the dishwasher and injects water using high pressure through the internal water passages to the top, middle and lower nozzles.
2. **Drain Pump**
   The pump that drains the polluted water from the dishwasher generated while the dishwasher is running.
3. **Heater**
   The heater is located on the water passages inside the dishwasher.
   It heats the flowing water to increase wash efficiency.
4. **Flow Mete**
   Measures the amount of supplied water by counting the pulses of the hall IC located at the next of the Inlet valve.
5. **Distributor**
   Located at the output end of the sump inside the dishwasher. It turns the flow of the water that goes to the bottom part of the dishwasher on or off.
6. **Dispenser**
   The location where the detergent and rinse aids are stored so they can be used by the dishwasher.
   The dispenser automatically supplies detergent and rinse aids to the inside of the dishwasher when they are needed.
7. **Tub Assy**
   An internal case made of stainless steel that makes up the basic framework of the dishwasher.
8. **Sump Assy**
   The place inside the dishwasher where water is collected. The injected water gathers here after circulation.
   The sump Assy is connected to the circulation motor, drain pump.
9. **Tub Front Assy**
   An internal case made of stainless steel that makes up the internal part of the front door.
10. **Basket Assy**
    The upper and lower racks where dishes can be loaded.
11. **Top/Middle/Lower Nozzles**
    Washes dishes by rotating and injecting the supplied water through the water passages at high pressure.
12. **Case Brake**
    A passage that adjusts the air pressure by connecting the pressure of the inside air which is expanded at high temperature during the wash and rinse cycles and the outside air pressure.
13. **Door Lock Switch**
    Detects whether the door of the dishwasher is open or closed. If the door is open while the dishwasher is running, the cycle is temporary stopped.
14. **Turbidity Sensor**
    In Auto cycle, It can sense the soil level, and control the washing steps.
    It is useful for energy saving & convenience of selecting proper cycle.
15. **Thermistor**
    It check the water temperature. Proper water temp. is helpful for washing & drying performance.
16. **Leakage Sensor**
    It check any water leakage toward bottom tray.
    If it sense the leakage, machine run the drain pump to drain water.

GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, CIS, Mideast & Africa	gspn1.samsungcsportal.com
Asia	gspn2.samsungcsportal.com
North & Latin America	gspn3.samsungcsportal.com
China	china.samsungportal.com

This Service Manual is a property of Samsung Electronics Co.,Ltd.
Any unauthorized use of Manual can be punished under applicable International and/or domestic law.

© 2012 Samsung Electronics Co.,Ltd. All rights reserved.

Printed in Korea
Code No.: DD68-02873A